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CHICAGO:
105 West Adams St.

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Railway Age

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"Reciprocal Buying" and Self-Regulation of Industry

SENATOR Brookhart of Iowa has introduced in the Senate a resolution charging officers of Armour & Company and Swift & Company, the meat packers, with unfair practices in the use of the traffic of these companies for the purpose of influencing the railroads to buy certain devices from manufacturing companies in which officers of Armour & Company and Swift & Company are alleged to be stockholders.

For some time the *Railway Age* has been calling attention to the growth of the practice of so-called "reciprocal buying." As we have remarked before, if this practice is good business, and therefore defensible, there is no reason why the greatest possible publicity should not be given to it. Senator Brookhart's record in the discussion of business questions is not such as to inspire the confidence of those who wish to see the business of the country conducted in a sound way and to avoid excessive regulation. It was naturally to be expected, however, that if the practice of "reciprocal buying" as it affects the railroads caused the consideration of further government regulation, the first suggestion of such regulation would come from some critic of the railroads and other large corporations such as Senator Brookhart.

A Tendency Toward Monopoly

As Senator Brookhart has mentioned officers of both Armour & Company and Swift & Company in his resolution, and as he evidently has been in contact with government officers in Washington who are well informed, there is now no reason why the situation existing as respects the manufacture and sale of draft gear to railroads should not be frankly discussed. It is well known that some officers of Swift & Company are stockholders in a company, which is, or formerly was, engaged in the manufacture and sale of draft gear to railways, because Swift & Company broadcasted the fact in a letter which the *Railway Age* published. It is hardly less well known in the railroad and railway equipment and supply industries that some officers of Armour & Company are now, or until recently were, stockholders in another company that is engaged in making and selling draft gear to railways.

The extent to which the large traffic controlled by the packing companies has been used to influence railways to buy draft gear from companies in which officers of the packing companies have been stockholders doubtless will be fully developed when the results of investigations now being conducted by both the Interstate Commerce Commission and the Federal Trade Commission are made public; and it remains to be determined by the proper tribunals whether any of the practices resorted to have been illegal or have involved unfair competition. There is no difficulty at present, however, in indicating the tendency and ultimate probable effects of a continuance of the practice of "reciprocal buying" in the railroad field.

Consider the present situation as regards the draft gear business. Those competing in the sale of draft gear to the railroads may be roughly divided into two classes. On the one side there are certain railway equipment manufacturing companies the ownership of whose stock has been such as to cause widespread belief that the huge traffic of certain other large companies is being used to promote their sales. On the other side are a number of what may be called "independent" manufacturers that have been and are now engaged in selling draft gear to the railroads, but which have no direct affiliations with big shippers controlling a large amount of traffic. Suppose that in point of the quality and prices of their devices these two classes of competing companies were on an absolute parity. Obviously, if the companies that are affiliated with large industrial companies controlling a huge traffic can and do use that traffic as an effective sales argument, they will get an increasing part of the draft gear business, and finally drive the independents completely out of the field. In other words, the plain tendency of the use of the traffic of large in-

dustrial companies to influence the sale of equipment and supplies to the railways is to create monopolies in the railway equipment and supply industry. If the traffic argument can be so used as to create a monopoly in one branch of the railway equipment and supply industry it can be so used as to create monopolies in many or all branches of it. In at least one very important instance it already has had the effect of establishing a monopoly.

Future of Railway Supply Business Involved

The entire future of the great railway equipment and supply manufacturing industry of the United States is therefore involved in this question of "reciprocal buying;" and in consequence, the future of the railroad industry is largely involved. Our railways are the most efficiently and economically conducted railway system in the world. This is largely due to the fact that throughout their history the manufacturers of equipment and supplies for railways have constantly initiated improvements, which, when adopted by the railways, have resulted in increasing the efficiency and economy of railway operation. The railroad market heretofore has been wide open for the inventor and the progressive manufacturer, whether large or small. The more big business uses and is allowed to use its traffic as an effective sales argument, the more the railroad market will be restricted for the inventor and manufacturer who must rely upon the merits and prices of his products in order to sell them. The more the railroad market is restricted in this way the slower will become progress in the improvement of railway equipment and devices.

The railroad market should be wide open to all who want to sell equipment and devices in it entirely on their merits as means of increasing the efficiency and economy of railroad transportation. This is in the interest of the railroads, because it is to their interest to operate as efficiently and economically as practicable. It is in the interest of the public because it is to the public's interest that railroad operation shall be as efficient and economical as practicable.

Much has been said within recent years by business leaders regarding the desirability of self regulation of industry as a means of preventing government regulation. If the practice of "reciprocal buying" is a growing menace to both the railroad and the equipment and supply industries, as we believe it is, it should be eliminated by industry itself, and not be left to be dealt with by government regulation; and the initiative in eliminating should be taken by railway executives. The practice is constantly defended upon the ground that it prevails in all industries—in other words that "everybody is doing it." It does not exist in the railroad industry because most railway officers want it to exist there. It exists there because most railways fear to stop it lest their competitors will not, and that in consequence they will lose their share of competitive business. They are afraid of the big stick of the big shipper, and they have reason to be.

But past experience has shown that, however dangerous it may be to antagonize big shippers, it may prove much more dangerous for the railroads to be unduly influenced by the promises and threats of big shippers. Past efforts to satisfy big shippers have been responsible for most of the past troubles of the railroads and for much of the regulation to which they are now subject. The big shippers are entitled to good service at reasonable rates, and to no more. In the long run, if the railways give them any more merely because they are big, both the big shippers and the railways will suffer for it.

The Passing of the Semaphore

DURING 1923, there were four more color-light signals than semaphores installed in automatic block territory in the United States and Canada, this being the first time that the number of light signals had exceeded the number of semaphores. Year after year the number of light signals has gradually increased as compared with the number of semaphores, until in 1929, when a total of 8,061 automatic signals were installed, 5,883 were light signals and 2,178 were semaphores. The reduction in the number of roads now installing semaphores is even greater than is indicated by comparison of the numbers of the different types of signals installed. Of the semaphore signals installed during the last year, 2,065, or all but 113, were placed in service on five roads. As soon as these five roads complete their major main-line signal program, or decide to adopt light signals, it is evident that the number of semaphores installed annually will quickly drop to a few hundred, comprising short installations used to fill in between existing sections of semaphore signals.

The majority of the roads have evidently adopted the light signals on account of the improved indications rendered throughout a 24-hr. period, especially during foggy and stormy weather. In addition, the light signal has no mechanism, motor or moving parts to wear, thus eliminating numerous failures and train delays as well as reducing the expense for maintenance and repairs. The development of the a-c. floating and the a-c. primary systems of power supply has made practicable the use of light signals wherever alternating current is available, and at the same time assures reliable operation when there is a temporary a-c. power outage. Likewise, with the further development of light signals, it is practicable to use as low as five-watt lamps, which may be operated successfully from primary battery power supply in territory where no a-c. current is available.

From an operating viewpoint, some roads are continu-

ing to install semaphores on single-track lines, particularly on account of the fact that semaphores can be used by track forces and others on motor cars to warn of approaching trains. However, where light signals with back lights are used and controlled on approach circuits, considerable protection for motor car operators is available and it can readily be supplemented by indicators placed at certain points near curves, tunnels or other points of special hazard. The objection to the use of light signals on some roads is that trains will be delayed in case the lamp in a proceed or caution unit should burn out. Certain roads have overcome this objection by using a cut-over relay, which provides that when a lamp burns out, the lamp in a more restrictive indication is cut in, while on the Missouri-Kansas-Texas an auxiliary lamp unit is illuminated to give a yellow light when the lamp in the regular green or yellow unit is burned out. Thus light signals and the method of power supply have gradually been developed to meet the requirements. Therefore, it is logical to expect that the number of semaphore signals put into use on new installations will gradually be reduced from now on.

Trend of Freight Business

THE trend of freight car loadings since the beginning of the year 1930 has been such as to support those who have believed that the recession in business, which began a few months ago, will be neither serious nor prolonged. The last serious decline of general business began in the latter part of 1920 and lasted for almost two years. It was caused, or at least accompanied, by a severe decline in commodity prices. The decline in business which began in the latter part of 1929 was accompanied and increased by a sharp decline of prices in the stock market.

In January, 1921, freight car loadings showed a decline of 14 per cent as compared with January, 1920. The decline in the amount of freight transported was much greater than these figures indicate, because, while there was a decline of 14 per cent in total car loadings, there was actually an increase of 23 per cent in less-than-carload shipments, which showed that a great deal of freight which previously had been shipped in carloads was being shipped in less than carload quantities. In January, 1930, car loadings were only about 6 per cent less than in January, 1929, the decline shown being considerably less than one-half as great relatively as in January, 1921. Shipments of miscellaneous freight are the best measure of the present and probable future trend of railroad traffic. In January, 1921, shipments of miscellaneous freight showed a decline of 35 per cent, while in January, 1930, they showed a decline of only 7½ per cent. The extreme decline of shipments of miscellaneous freight in the early part of 1921 undoubtedly was due to the excessive inventories carried by most companies at that time, which they were able to draw upon for a long time to supply their customers. Likewise the relatively small decline of shipments of miscellaneous freight in the early part of 1930 undoubtedly has been due to the fact that the inventories carried by commercial concerns when the recent decline in business began were not much more than one-half as great as in the latter part of 1920, and that in consequence they must continue buying on almost a normal scale to supply their customers.

Car loadings are perhaps the best single measure available of the activity and trend of general business. Thus far in 1930 they have been such as to encourage optimism rather than pessimism regarding the business developments which will occur after the immediate effects of the break in the stock market are past.

New York Central Offers More Stock to Employees

THE New York Central, if the Interstate Commerce Commission consents, will offer stock to its employees on a time payment plan at 28 per cent below the current market price. This is the third allotment of stock which the company has made to its employees. The preparation of a plan for the sale of stock to employees is an important task, since its detailed characteristics largely determine its degree of success or failure. What is the first requisite of a stock sale plan? In our opinion it should be safety of the investment. This characteristic New York Central stock certainly has. Another desirable feature is a fair rate of return, since no one but a man of wealth can truly afford to invest in enterprises which pay a very low rate of return. This stock, at the current dividend rate of $8 per share, will yield 6.15 per cent on the investment at the price of $130 at which it is offered for sale to employees.

It is a generous act for a railroad to offer stock to employees at a price below the market. There is, of course, no legal or moral obligation to do so. On the other hand, such an offer, particularly if it is restricted to employees who have been in service for some time, is an acknowledgement of loyalty and efficiency which should serve still further to strengthen these qualities among employees. An offer of stock at a price below the market is a form of selective bonus which is paid only to those who are thrifty enough and sufficiently confident in their company to avail themselves of the award. The New York Central's plan allots a maximum of one share of stock at $130 for each $400 of an employees' annual earnings. At a current market price of $180 for the stock, an employee earning $2,400 per year is thus offered a bonus of $300, provided he will show

his worthiness by his thrift and his confidence in the company. No fairer or more carefully selective plan of singling out those employees who are thoroughly deserving of the company's generosity could probably be evolved.

The offer, then, embodies safety of investment with an attractive rate of return, a generous time-payment plan and the bonus feature of a below-the-market price. It has, moreover, all the advantages attendant upon any plan of stock sale to employees—such as the promotion of an understanding between owners and employees by emphasizing the identity of their interests, the better service to the public which employee-owners give, and the benefits which come to all who acquire substance by their thrift. Several plans for the sale of stock to employees have been announced by the railroads in recent months. It is gratifying to see in them, as we see in this, evidence of careful planning to assure to all concerned the maximum benefits obtainable with employee participation in ownership.

A Saving That Has Not Yet Arrived

THERE is sometimes a slip in the process by which the public, as consumers, is supposed to be reimbursed in lower prices for its expenditures as taxpayers for the reduced freight rates to result from river canalization and the operation of government barge lines. Senator Black, of Alabama, read in the Senate on February 5 a letter from a grocery company at Mobile complaining that the sugar refiners at New Orleans are billing their product to wholesale distributors at Mobile at the refinery basis price plus rail rate from New Orleans to Mobile, 24½ cents per hundredweight, although actually shipping the sugar via the Mississippi-Warrior Barge Line at a rate of 17½ cents per hundred, and that this is "greatly interfering with the competitive status of Mobile merchants," because nearby jobbing points are still able to purchase sugar on the basis of barge rates. "One of the purposes of the Mississippi-Warrior Barge Line, a part of the Inland Waterways Corporation of the United States government," the letter says, "was to reduce freight cost, making a saving to the consumer." Senator Black then read another letter from the assistant to Chairman Ashburn of the Inland Waterways Corporation saying that "unquestionably, since the organization of the so-called Sugar Institute, the sugar refineries are so operating" and that "if we knew of any way to overcome this we would be glad to avail ourselves of it." He expressed some hope that the Department of Justice and the Federal Trade Commission might be able to do something about it. Meanwhile here is one item to be subtracted from the amount which the government barge line claims it is saving the consumer as an offset to what he pays in taxes, although the sugar companies probably pay taxes also.

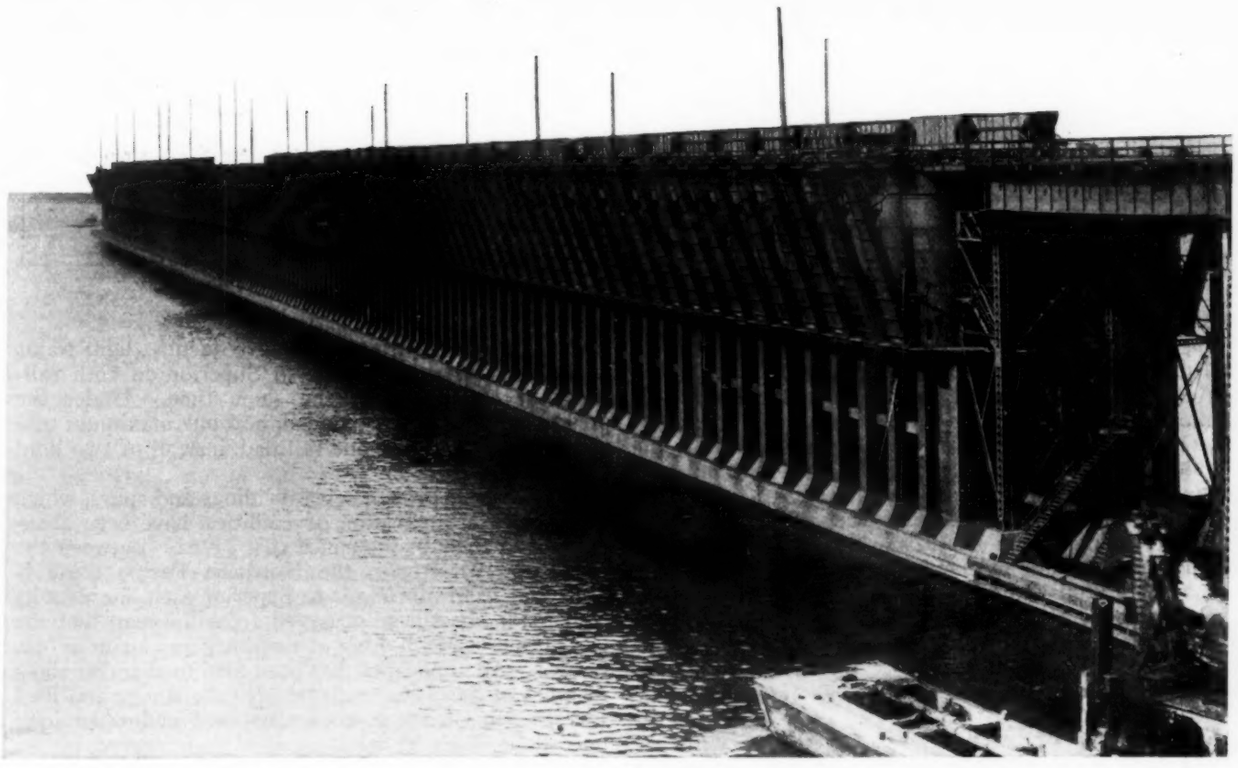
Mechanical Force Stabilization

FACED with a declining traffic and revenue in the latter part of 1929, many railroads found it necessary to curtail their operations of all kinds, including mechanical maintenance work. Shop and enginehouse forces were reduced, hours of work shortened, or, in some cases, repair points closed, and maintenance forces given an enforced "vacation without pay." From a strictly business standpoint, if for no other reason, the railways can afford to bend every effort to minimize this practice, which impairs the loyalty and morale of the shop forces. When consideration is given to deferred maintenance and loss of efficiency both before and after the lay-off, there is little doubt that in the long run mechanical department expense will be increased by drastic reduction of forces in spite of the temporary showing of reduced monthly payroll expense.

The serious effect of uncertainty regarding employment upon shop forces does not seem to be fully appreciated. It is strikingly illustrated by the recent remark of the superintendent of a small shop, who said, "I can lose 300 man-hours work in one day by simply letting the rumor get around the shop that I am going to lay off two machinists and two boiler makers." Human nature is much the same, regardless of rank, and it may seriously be questioned if the mechanical department head himself, faced with an enforced and payless vacation two weeks before the Christmas holidays, would be in a mental condition to turn out constructive and valuable work for his road.

Space does not avail in this editorial to analyze the reasons for wide fluctuations in mechanical department operations which, in some cases, presumably, are unavoidable. There is, however, too ready and general an acceptance of such fluctuations, for experience shows that annual railroad traffic, revenue, locomotive-miles, car-miles and mechanical maintenance work are predictable within a surprisingly close margin, and no unsuperable obstacle prevents the performance of maintenance work on an approximately uniform basis throughout the year instead of permitting it to fluctuate widely with variations in monthly traffic and earnings.

One large railroad system predicted its gross revenue for 1929 within approximately 0.2 of one per cent and maintained its shop forces within a maximum monthly variation of 2.6 per cent, much of this variation being due to a gradual permanent reduction in shop forces, made possible by increased efficiency. The stabilization of mechanical maintenance forces within reasonable limits is practical and one of the most constructive steps which the railroads can take in 1930.



The Northern Pacific Ore Dock at Superior

Pooling Ore Traffic Results in Savings

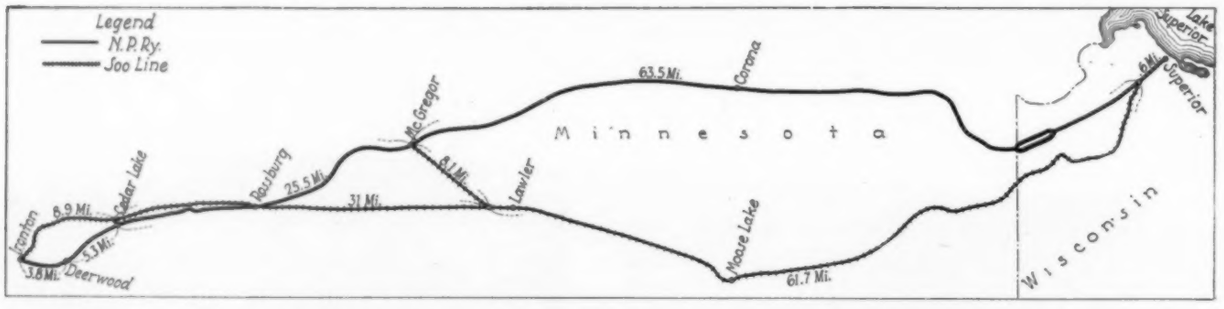
Northern Pacific-Soo Line plan of joint operations proves successful

AS a result of pooling the ore traffic from the Cuyuna Range in Minnesota, and handling it under a joint operating plan, the Northern Pacific and the Minneapolis, St. Paul & Sault Ste. Marie made a substantial saving in 1929, the first year of operation under the new plan. In the coming years, even greater sums will be saved, after certain proposed line abandonments have been approved. While pooling of passenger traffic has been indulged in for two or three years in the northwest, this is believed to be the first instance of pooling freight traffic of this magnitude.

The Cuyuna Range mines are in Crow Wing county in north central Minnesota, about 100 miles west of Superior, Wis. The annual output, which during the last 14 years has approximated 1,800,000 tons, moves by rail to the railways' ore docks at Superior where it is trans-shipped into boats and moves to the eastern smelters by water. The ore produced is what is known as "spotty," since the manganese content varies widely from one day to another, and there is never any means of predicting, at any given time, what sort of ore will be mined and loaded. The practice of years has been to load the ore into cars, and, if orders were on hand for ore of the manganese content of that particular day's loading, the cars would move. Otherwise they are held until there is a demand for that particular type of ore, and, in the meantime, the railroads have been required to find places to store the cars until they are ready to move. Under these circumstances, an unusually large amount of facilities were required for the amount of tonnage handled, and, under the competitive system of handling previously in existence, there was little, if any, profit in the movement for either railway.

Railways Decide to Pool Traffic

Before the opening of the last season, the executives of the two lines met and decided to try to work out the pooling of the ore traffic as the solution to the problem. Before proceeding with the plan, however, they took the shippers into their confidence and explained to them what it was proposed to do. The plan met with the favor of the shippers, one of the controlling factors



Soo Line—Northern Pacific Lines in the Ore-Shipping Territory

being that it insured an adequate car supply at all times and provided for a faster movement through Superior.

Accordingly, application was made to the Interstate Commerce Commission for permission to pool this traffic, and two of the shippers, carrying proxies from all the shippers in the range, went to Washington in person, in support of the application. As a result of this unity of effort, the commission approved the application, under its ruling of June 3, 1929, which grants authority for pooling of traffic in this manner. Although no previous application had been made under this ruling for the pooling of freight traffic, the commission granted the authority within ten days of the receipt of the application, which is probably a record for speed in matters of this kind.

Operations in the Range

As indicated on the map, the Cuyuna Range is situated north of the main line of the Northern Pacific, between Duluth and Staples, and is reached by branch lines of the N. P. and the Soo Line. Joint switching service has been established on the range, the engines and crews being supplied by the two roads in the same proportions as the arbitrary basis on which traffic is divided. As a part of the plan, certain way freights of the Soo Line into the territory are to be discontinued and the traffic these trains formerly handled to the range points is to be hauled in Northern Pacific trains, thus avoiding a further duplication of effort,

An important feature of this pooling of traffic has been the consolidation of all ore operations under one supervisory head. A joint superintendent of ore facilities has been appointed, with headquarters at Superior, who is assisted by a joint trainmaster on the range.

The matter of car supply, which has always presented certain problems during the shipping season, has now been placed on a more efficient basis. The ore cars of both companies have been pooled on an ore tonnage capacity basis, and are supplied, regardless of ownership, to the mines for ore loading. This centralized control of car supply permits the handling of greater tonnage, with fewer cars tied up in the movement. This was brought out clearly in 1929, when nearly three million tons of ore were handled, instead of the normal two million tons, and no car shortages were experienced.

Head of Lakes Operations

After the ore is loaded, it is hauled from the range to the docks at Superior in the trains of either company, regardless of routing, the division of haul between the two companies being equalized from time to time, as directed by the superintendent of ore facilities. This system permits the making up of maximum tonnage trains, with the accompanying saving in operating expense, whereas previously, it was not always possible to render the service demanded and, at the same time, hold the cars until enough had been assembled for a maximum tonnage train. Not infrequently, light trains would start from the range to Superior on both railroads at approximately the same time. Under the present system, this is avoided, and one maximum tonnage train is run over one railroad, instead of two light trains.

On the range proper, several sidings and spurs, which represented a duplication of facilities, have been abandoned and their maintenance cost saved. Between the range and McGregor, the Northern Pacific route is used, and from McGregor to Superior each line uses its own road. It will be observed from the map that the two lines cross each other at Rossburg and again at McGregor. An application has been filed to abandon about 31 miles of Soo Line track between the Range and East Lake, as this track is no longer used under the joint operations, and the territory is already served by the Northern Pacific.

Superior Operations

Under the new plan, all of the ore is brought to the Northern Pacific steel-concrete ore dock at Superior and the wooden ore docks of the Soo Line at that point are to be abandoned. To handle the increased business, additional tracks have been added to the Northern Pacific ore yard at Superior, at a cost of $165,000.

Time is saved in trans-shipping under the new arrangement. This is brought about by the fact that the Northern Pacific docks are immediately opposite the harbor entrance, and the boats may reach them within a short time after entering the harbor. The Soo Line docks, on the contrary, are a considerable distance from the harbor entrance and can be reached only by a winding channel and by passing through several lift or swing bridges.

Both the Soo Line and the Northern Pacific have found the new arrangement highly efficient after one season's try-out and have entered into a long term agreement covering the joint operations.

* * *

On the New York Central Near Elkhart, Ind.

Atlantic Coast Line Builds "Dope" Laundry

Lubrication bills and hot boxes targets of new plants for cleaning journal packing

The Oil Settling Tanks

THE Atlantic Coast Line has built one plant and expects to build two more for reclaiming journal packing and lubricating oils in an approved fashion. The plant now in operation at Rocky Mount, N. C., has a capacity of 4,000 lb. of prepared journal packing a day and will serve the first district of this road, while the other plants will serve the other two districts. The new plant surpasses anything of the kind previously operated on the Atlantic Coast Line. The supply forces are greatly interested in the plant because it promises to reduce the lubrication bills. The mechanical forces have obtained a higher grade output and the operating department counts on the plant to improve the hot box record. Crank case oil is also reclaimed at the new plant.

Requirements More Severe

At present, journal packing reclamation is in a controversial state because of discussions between railroads over lubrication troubles. For some time, the lubrication of journal boxes on freight cars has been giving the railroads much concern. Hot box epidemics have been experienced and reclaimed oil has been charged for a share of the trouble. In a new rule adopted (Rule 66, A. R. A.), the kind of waste and oil which may be used in journal packing is prescribed as well as the manufacture and fit of bearings, and the methods and renewal of packing. The Atlantic Coast Line has been making a special study of the subject for the past year and the new plant at Rocky Mount is the result of that study. Heat-treatment for eliminating water, and chemical treatment for extracting foreign substances from the oil, are important features of the new plant.

How the Waste Is Recovered

All packing accumulated on the First division of the Atlantic Coast Line is delivered to the plant in steel containers made of old paint drums equipped with metal covers. It is placed on a picking table where a wire netting of large mesh is used to assist in picking the waste apart. Packing rolls are also pulled apart on this table and the larger pieces of babbitt and dirt are removed. The waste is then submerged in a vat containing hot oil and the mass is agitated to loosen it. The waste is then removed and placed on a perforated rack which is suspended over the vat to allow surplus oil to drain off. It then goes into a centrifuge where the oil is extracted. After five or ten minutes in this machine, the oil is removed and the waste restored practically to its original state of cleanliness.

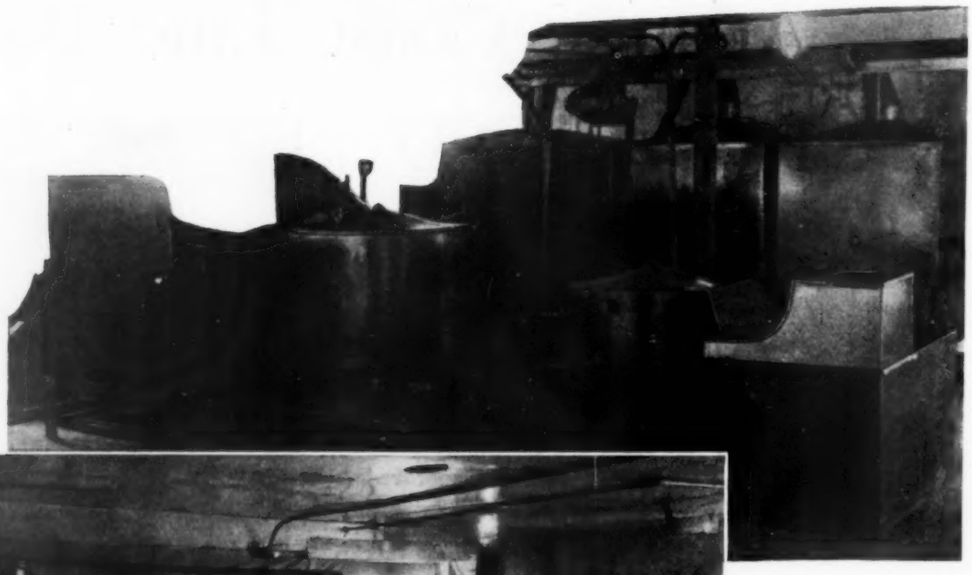
The waste is then deposited in a metal cylinder covered with wire netting of one-inch mesh. This cylinder alternately revolves four times in one direction and then four times in the opposite direction to loosen the waste, cause the short fibres and small particles of dirt, etc., to fall through the netting and give the mass the fluffiness desired for resaturation with oil. After this operation, it is again placed on a picking table and covered with a wire netting of large mesh, where the waste is picked apart and all short fibres and pieces of babbitt and dirt not removed in the tumbler are shaken out. The waste is then taken to a vat where it is soaked for two hours in oil heated to a moderate temperature. The vat is equipped with a wire basket suspended from a winding shaft, and at the end of the saturation period, the basket is raised and the waste allowed to drain a few minutes. It is then placed in a movable press where the excess oil is removed. This oil returns to the soaking vats and the waste is left ready for use.

Reclaiming the Oil

The old oil is recovered from the centrifuge machine by draining into a receiving tank. It is then pumped into one or more of three tanks, where it is heated to a high temperature by steam coils in the bottom of the tanks. This is done to evaporate all moisture.

The tanks are kept from boiling over by a coil of perforated pipe in the bottom of each, through which compressed air is forced to break up the foam which tends to form as long as moisture is present in the oil. The operator tells when the oil is free from vapor by a glass plate in each tank cover, upon the under side of which moisture collects as long as vapor is present.

After this treatment, the liquid is pumped into two settling tanks containing from six to eight inches of water. When the tanks are filled, 3½ oz. of soda ash for each gal. of oil is sprinkled over the surface and a temperature of 140 deg. is maintained for 10 or 12 hr., during which the chemical precipitates foreign substances. After the oil has completely settled, as determined by spreading it on a piece of glass, it is drawn from the top of each tank by means of a telescoping pipe and discharged into a storage tank, from which it is pumped into the soaking tanks for remixing with waste. Oil that has been used in the soaking tanks



Left to Right: Drain Rack, Centrifuge and Water Extracting Tanks

Left to Right: Movable Press, Soaking Vat and Tumbler

for several days is again pumped back into the settling tanks to remove any dirt or lint in it. The sediment in the bottom of the settling tanks is drawn off through the valves and used as a lubricant for centerplates, side bearings, switch points, etc.

Rolls for the ends of journal boxes are made in this plant from new waste and oil, but the operation is all performed on a small machine operated by motor, this machine doing better and faster work than was previously done by hand.

Hot Boxes Reduced

The Atlantic Coast Line has reduced its hot boxes in freight service from 15,218 in 1924 to 8,188 in 1928, counting both foreign and system cars, and has increased the miles run per hot box from 24,395 in 1924 to 43,216 in 1928, while the number of passenger car hot boxes have been reduced from 552 in 1925 to 117 in 1928 and the miles run per hot box increased from 146,768 in 1925 to 614,284 in 1928. This record was still further improved last year as a result of a campaign in which an objective of 100,000 miles per hot box has been set for freight service and 1,000,000 car-miles per hot box for passenger service. In this campaign, all factors contributing to hot box failures are being considered, but the new journal packing reclamation methods are counted upon to contribute in this work as well as to reduce lubrication costs.

Crank Case Oil

The lubricating oil recovered from automotive engine crank cases is reclaimed at Rocky Mount in much the same way as the packing oil. The oil is put into a tank equipped with a steam coil and compressed air pipe and boiled until all the water and gasoline is evaporated and then it is passed into a settling tank, dosed with chemical, and allowed to settle until perfectly clear. All oil from the automobile trucks and the pumping station at Rocky Mount is being recovered in this way at the present time.

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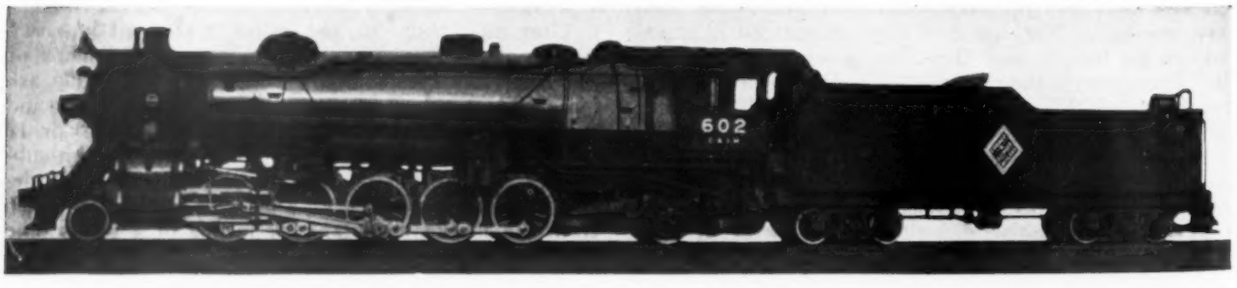


Chicago & Illinois Midland 2-10-2 Type Built by Baldwin Locomotive Works

French Railway Adopts 5300-Horse-power Electric Locomotives

Paris, Lyons, Mediterranean Railway now using unusually large single-cab electric passenger locomotives of singular design

Cab Structure for 2-C+C-2, Class 262-AE Locomotive

By Marcel Japiot

Vice Chief of Motive Power and Rolling Stock, Paris, Lyons, Mediterranean Railway

FOUR high-speed electric locomotives of the 2-C+C-2 type have been put in service on the Mont-Cenis line of the Paris, Lyons, Mediterranean Railway. The mechanical features of these locomotives have been designed by the Societe de Construction des Batignolles, and built at the Nantes works of the Compagnie Generale de Construction de Locomotives, while the electrical equipment has been designed by the Societe Oerlikon, and built in the new works erected by the French branch of that company at Ornans.

Four Experimental Locomotives Tried

When the P. L. M. Railway decided to proceed with 1,500-volt d. c. electrification over an 84.5-mile double-track section of the Mont-Cenis line, from Culoz to Modane (near the Italian border), four high-speed electric locomotives of widely different designs were ordered in 1922 for testing purposes, to determine the type best suited to high speed service on that line.

Two of these locomotives were of the 2-B+B-2 type, with single cab, four twin motors, and various systems of quill drive; the third one was of the 1-C+C-1 type (or more exactly 1-A+B+B+A-1) with two cabs, and six nose suspended motors, while the fourth one, of the 2 B-1 + 1-B-2 types, also with two cabs, had only two large motors (one in each cab) with a peculiar design of side rod drive.

Comparative tests of these four experimental locomotives were carried out in 1925 and 1926, on a double-track section of the Mont-Cenis line, 15.5 miles long, fitted with a 1500-volt over-running third rail.

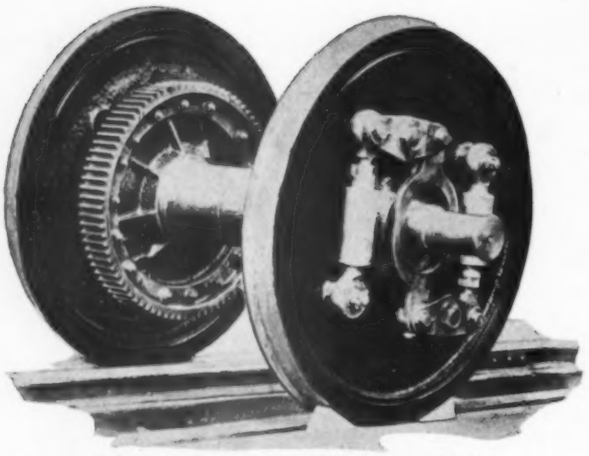
From these experiments, it appeared that the 2-B+B-2 locomotive, witht single cab, twin motors and quill drive, was best suited to the special conditions of the Mont-Cenis line; it was therefore decided in 1927 to order several high speed locomotives built along the same general design, but much more powerful to provide for increasing train weights and higher speeds.

The experimental engines had been designed to fit the particular needs of high-speed service on the Mont-Cenis line, with its variable profile, which includes ten miles of nearly continuous three per cent grade.

Because of severe grades, the experimental locomotives had been designed to give their maximum output at relatively low speeds, around 30 m.p.h., while being able to run at much higher speeds (from 65 to 70 m.p.h.) on level track. A trailing load of 550 short tons* was deemed sufficient for the future needs of the international "De luxe" trains from Paris to Rome over the Mont-Cenis line, and an electric helper engine was to be added, as formerly with steam traction, on the St-Michel to Modane section, including the long grades of 2 to 3 per cent.

The 2-B+B-2 locomotives was accordingly designed for an hourly rating of about 2,700 hp. at 31 m. p. h., with a maximum permissible speed of 68 m. p. h.

* All the data in this article are given in U. S. units unless otherwise stated.



Oerlikon Quill Drive With Spring Rods

By bringing the number of the twin motors from four to six (twelve armatures instead of eight) the output of the new locomotive might have been raised to 150 per cent of the rating of the former one. It did not appear sufficient, however, and the builders were asked for more powerful motors, designed for much higher speeds. Thus the hourly rating of the new 2-C+C-2 locomotive has been raised to 5,300 hp., nearly twice as much as that of the 2-B+B-2 locomotive. With a gear ratio of 3.185, the speed corresponding to the hourly rating is 50 m. p. h., with a tractive force of 40,000 lb.; the continuous rating is 28,700 lb. tractive force at 54 m.p.h. (about 4,120 hp.) with a maximum permissible speed of 81 m. p. h.

Cab of Elaborate Design

The cab of the new locomotive, 67 ft. 6 in. long, looks like a big Pullman car. In order to make it as light as possible, it was not built upon a heavy cast steel bed, as usual in American practice, but with two girders of the Vierendeel type, including the whole height of the cab. The cab contains compressor sets, motor ventilator sets, contactors, etc., and the weight of the complete cab is 108,250 lb.

The cab rests upon the two trucks through two spherical pivots with Belleville springs and eight lateral supports with coil springs; four of these supports are set opposite the pivots, and care only for the rolling of the cab; the four other supports, with much more powerful springs, the tension of which is adjusted through suitable screw plugs, are utilized correctly to distribute the load between the driving and the guiding wheels. This spring arrangement provides easy riding at high speeds on both tangent and curved track.

The articulated joint between the two motor trucks is of the ball and socket type, with large spherical bearings 8½ in. diameter. The vertical clearance may be adjusted from less than ⅛ in. up to 2 in. for testing purposes. As the articulated joint is made to transmit tractive force and buffing stresses between the two trucks, there is no end play, but one of the pivots of the cab is made to slide lengthwise on the frame of the truck.

Three of the new locomotives are built without side play on the articulated joint, while the fourth one has been fitted with spring controlled side play as an experiment.

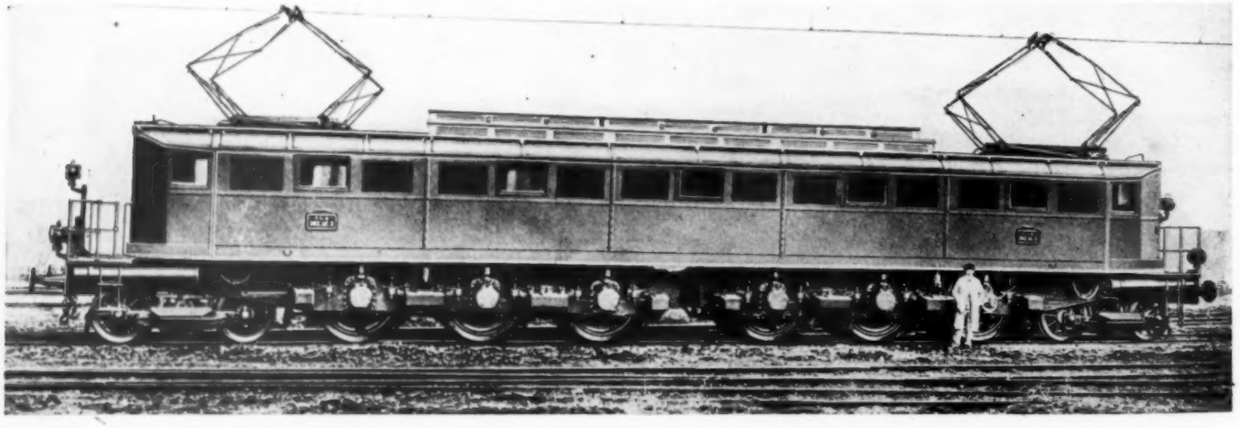
Electrical Apparatus

The motors are of the twin type with two armatures in the same casing, bolted to the truck frames. The two pinions of the twin motors mesh with a solid gear mounted on a quill and the transmission device between the quill and the driving wheels is the Oerlikon link system with springs inserted in the rods, which design has proved very successful on the experimental engine.

The traction motors are fitted with six main poles and commutating poles. Twelve different operating

General Data

Driving wheel diameter		63 in.
Guiding-wheel diameter		40 in.
Guiding-truck wheelbase		6 ft. 10¾ in.
Rigid driving wheelbase		15 ft. 1 in.
Total motor truck wheelbase		28 ft. 6½ in.
Total locomotive wheelbase		68 ft. 3 in.
Total length over buffers		78 ft. 1 in.
Length of the cab		67 ft. 6 in.
Weight of the complete cab		108,250 lb.
Weight per guiding axle		28,500 lb.
Weight per driving axle		39,500 lb.
Weight on drivers		237,000 lb.
Total weight of the locomotive		351,000 lb.
Number of twin motors		6
Number of armatures		12
Weight of each twin motor (without pinions)		12,200 lb.
Weight of each armature (without pinion)		2,100 lb.
Gear ratio		86/27 = 3.185
Total output	continuous rating	4,120 hp.
	hourly rating	5,300 hp.
Tractive force	continuous rating	28,700 lb.
	hourly rating	40,000 lb.
Corresponding speed	continuous rating	54 m.p.h.
	hourly rating	50 m.p.h.
Armature current	continuous rating	573 amp.
	hourly rating	733 amp.
Maximum permissible speed		81 m.p.h.
Weight per horsepower		66.2 lb.



The Locomotive Weighs 351,000 Pounds and Has a One-Hour Rating of 5,300 Horsepower

speeds are obtainable. All the contactors for the main circuit are of the individual electro-pneumatic type, except the reversing switches which are of the drum type, also electro-pneumatically operated.

No high-speed circuit breaker has been provided, but the line contactors are always two in series on each motor circuit. They are built to break a current of more than 4,500 amperes at 1,500 volts, and have been successfully tested on heavy short circuits in front of a substation.

The line contactors are tripped by overload relays, an overvoltage relay and a no-voltage relay; before tripping the line contactors, these relays automatically insert the starting rheostat in the circuit. Extensive oscillograph tests made with this scheme and with several types of high-speed circuit breakers fitted to other locomotives, have shown that the voltage surge when breaking such heavy currents is about the same.

A grounding contactor (pneumatically operated from the cab) has been provided as an emergency device, in case the line contactors or any other contactor does not break a short circuit.

The auxiliaries include two 11.5-hp. motor-compressor sets, and two 16-hp. motor-ventilator sets, these four motors operating on 1,500 volts.

To dispense with a motor-generator set and any low-voltage regulating device, a 45-cell alkaline battery, furnishing current at 64 volts for control and lighting circuits, is connected between the negative side of the four 1,500-volt auxiliary motors and the ground. To protect the battery and the low-voltage circuits against over-voltage from the auxiliary motors, in case an internal battery connection becomes loose, an over-voltage relay, connected between the positive side of the battery and the ground, is provided to trip the electromagnetic contactors of the four auxiliary motors.

University of Michigan Creates Transport Library

THE University of Michigan, through its Department of Transportation and Railway Engineering and the head of that department, John S. Worley, has established a Transportation library at Ann Arbor, Mich., which, with the exception of a few highly specialized collections, is believed to be the only library in the United States devoted solely to transportation. The library is housed in the East Engineering building on the University Campus and after six years of persistent collecting on the part of its sponsors has accumulated nearly 70,000 items.

A constant effort is being made to locate private transportation collections, because usually upon the death of their owner they are dissipated or destroyed through failure on the part of those into whose hands they fall to realize their value, and the library is now in a position to receive gifts and information concerning material which might otherwise be destroyed. Of late, several thousand dollars has also been contributed to the library by officers of the Detroit Edison Company, the Flint Motor Company, the Dodge Brothers Corporation, the Hudson Motor Car Company, the Reo Motor Car Company and the Ford Motor Company, while the Pennsylvania has made a gift of a large number of books on railway subjects.

Included in the library are text and reference books dealing with such subjects as history, regulation and rates; documents, a large number of which are government reports dealing with early explorations and surveys; manuals, such as "Poor's"; technical journals; proceedings of technical societies; reports of the Interstate Commerce Commission and of state and Canadian railway and utility commissions; engineering reports on specific problems; laws and charters; correspondence and personal papers; prints and pictures, including early advertising material; annual reports of corporations, numbering more than 5,000; maps and atlases and a collection of more than 500 lantern slides designed to illustrate lectures on the history of transportation. The collection of manuals contains a complete file of the "Journal of the Arts and Sciences," beginning with the year 1750, while among the technical periodicals is a complete file of the "Railway Journal," beginning with January, 1832, and the "Railway Chronicle" which was published in the early forties. Included in the group of correspondence and personal papers are the papers of Judge Thomas M. Cooley, first chairman of the Interstate Commerce Commission, and about 35 volumes of the correspondence and instructions of Judge C. A. Prouty, director of the Federal Valuation Board.

Unless a constant effort is made toward its discovery and preservation, a large amount of the really valuable literature on transportation covering the period from 1775 to 1850 will never reach the shelves of any library. The transportation library is also looked upon as an encouragement to research which has produced such works as Phillips' "History of the Railroads of the Southern Cotton Belt" and Bronson's "History of the Illinois Central."

When the work of collecting material for the library was begun in 1923, it was found extremely difficult to obtain books, pamphlets and reports of the sort desired, because of their rarity and the fact that very little money was available for their purchase. Much of the early material was finally located through the examination of hundreds of second-hand book catalogues.

One of the historical objects prized by the library is a section of the original track of the Michigan Central, thought to have been laid in 1839 and discovered during highway excavation near Ann Arbor. It consists of an excellently preserved piece of oak, four inches by four inches in section, upon which is fastened strap-iron, about half an inch in thickness and slightly more than an inch in width.

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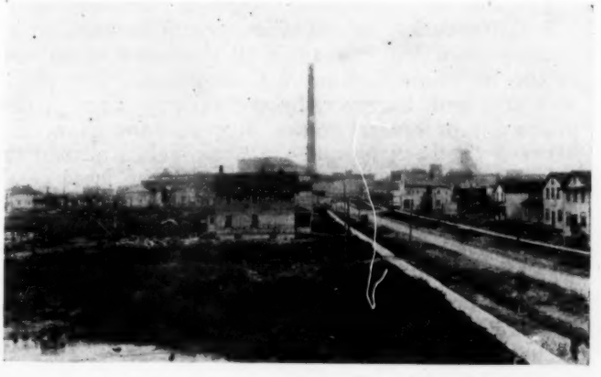


Noranda, Que., a Prosperous Mining Center Which a Few Years Ago, Prior to the Advent of the Railroad, Was Primeval Forest

Thirteen-Mile Line B

Two "Whirly" Shovels in Tandem Operation (above). A View of Cumberland Mountain from the South Portal of the Hagans Tunnel (left)

THE Louisville & Nashville is now completing a line 13.6 miles long, extending from southeastern Kentucky, across Cumberland mountain, into Southwestern Virginia, to fulfill the terms of an order of the Interstate Commerce Commission. The project was proposed, however, by the railway, since it comprises one of several routes suggested for connections between the L. & N. and the Clinchfield Railroad that were embodied in the application for the lease of the latter by the L. & N. and the Atlantic Coast Line. As set forth in the application, these routes were in the nature of tentative suggestions to be carried out if and when required by the demands of traffic. But the commission's order of June 3, 1924, ratifying the lease made the building of the line mandatory, the L. & N. being required to apply for a certificate of convenience and necessity within 12 months.

The lease of the Clinchfield, according to the application, had several objects. One of these was to permit of a physical connection between the L. & N. and the A. C. L., which controls the former through the ownership of 51 per cent of the stock. Another is to develop a new through route under unified control between the Southeast and the Central West. But the greatest emphasis was placed on the opportunity which control of the Clinchfield would afford for an outlet to the Southeast for eastern Kentucky and southeastern Kentucky coal originating on the lines of the Louisville & Nashville. It was largely on the arguments presented for the last advantage that the commission approved the lease.

Coal Fields an Asset to the L. & N.

These two coal fields have become an important source of traffic for the L. & N. The Hazard field on the Eastern Kentucky division, which was opened up in 1913, now has a mine capacity of about 1,000 carloads per day, while the Harlan and Benham fields, on the Harlan branch of the Cumberland Valley division, which were also opened in 1913, have a mine capacity of about 1,200 carloads. Located in the rugged terrain of the Appalachian range, these coal fields are accessible by rail only through routes which follow the natural water courses. Thus, the Eastern Kentucky division follows the north fork of the Kentucky river, while the Harlan branch was built in the valley of the upper reaches of the Cumberland river, occupying the base between Pine mountain and Cumberland mountain.

Contiguous fields to the east and southeast have been tapped in a similar manner, the Big Sandy division of the Chesapeake & Ohio entering eastern Kentucky from the north, while the Southern and the Norfolk & Western have entered fields on the south side of Cumberland mountain from the east. But the mountain wall has served as an effective barrier to prevent any direct contact or overlapping of these various routes of access, although, as seen on the map, the extremities of these

Breaks Mountain Barrier

Chevrolet-Hagans connection links Louisville & Nashville coal fields with the Clinchfield and the Southeast

tap lines fail by only a few miles, in some cases, of reaching a common point. The one exception to this rule is the main line of the Louisville & Nashville's Cumberland Valley division which enters the basin of the Powell river through Cumberland Gap to reach the territory served by the Southern and the Norfolk & Western in the vicinity of Appalachia.

L. & N. Coal Moves North and West

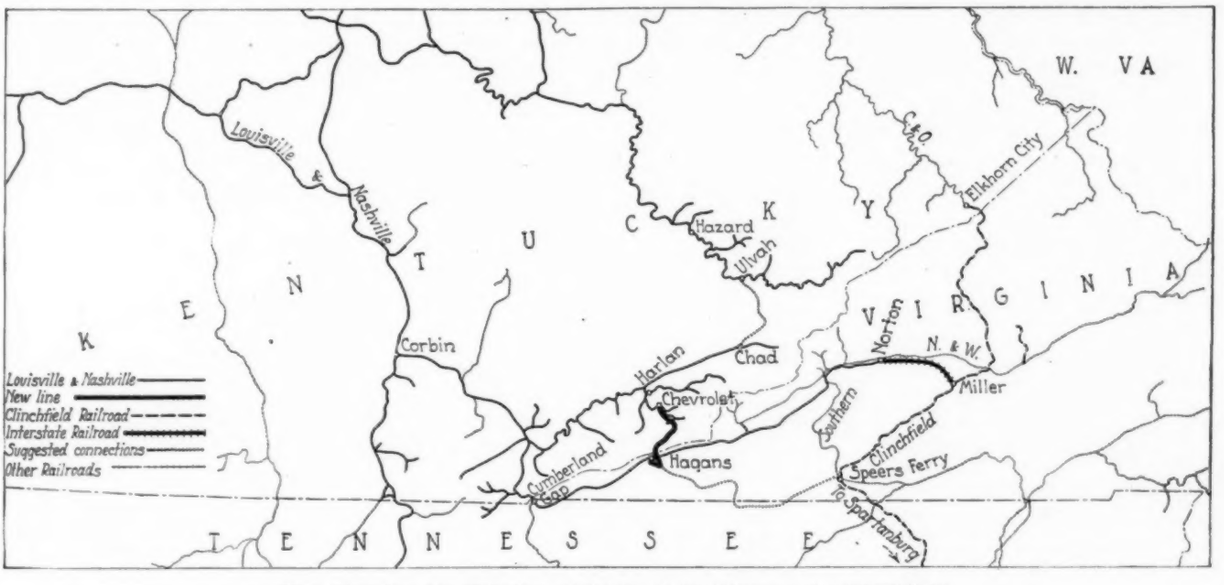
It was natural, therefore, that L. & N. coal should seek its outlet to the west and north rather than to the east and south. The entire output of the Hazard field, amounting to about 210,000 carloads annually, moves north and west, 60 to 65 per cent of it going into interchange at Cincinnati. Of the output of the southeastern Kentucky field, about 350,000 carloads annually, only a relatively small proportion moves to the south of southeast. While there is no desire on the part of the railroad to give up any of its coal markets in the north and northwest, it is felt by the management that an outlet to the southeast, to be realized by a connection with the Clinchfield, would open up a market whereby a more equable demand for coal and a more satisfactory car supply at the mines could be effected.

As seen on the map, the Clinchfield extends from a connection with the Chesapeake & Ohio at Elkhorn City, Ky., southward to Spartanburg, S. C., where a connection is made with the Charleston & Western Carolina, a subsidiary of the Atlantic Coast Line. As the Clinchfield makes no direct connection with the Louisville & Nashville, the primary problem was a means by which this connection could be made. Various routes were proposed, but the one that proved most attractive was

View Looking North From the Portal of Tunnel No. 3

The line takes a sharp curve to the right, the filling material seen in the center of the view being the waste bank of soft material removed from the site of the fill.

that offering a through route from the Eastern Kentucky division to the Harlan branch of the Cumberland division and from the latter across the mountain to the Norton line of the Cumberland division, and thence across country to the Clinchfield at Speers Ferry. The first leg of this route is a suggested line from Ulvah, Ky., in the Hazard field, to Chad in the Harlan field, a distance of 18 miles, estimated to cost about $7,000,000. The second leg traverses the existing line from Chad to Chevrolet, 26 miles. The third is a new line from



Map Showing the Relation of the L. & N. Lines to the Clinchfield

Three Structures of Special Design

(Top Center) Skew curved underpass for the Lick Branch spur
(In the Oval) Double-deck highway-waterway culvert near Hagans
(At the Right) One of the 70-ft. arches over Martins Fork

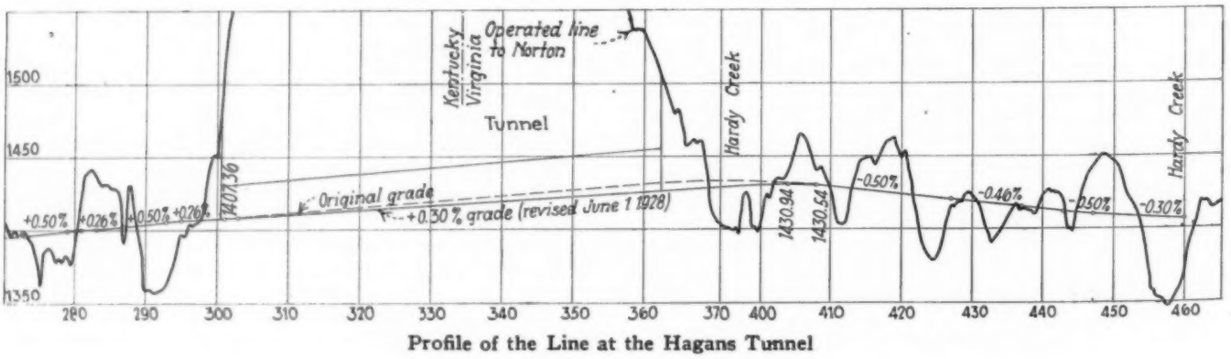
Chevrolet, Ky., to Hagans, Va., on the Norton line, a distance of 13.6 miles, estimated to cost $5,300,000. The fourth leg is a line through the valley of the Powell and Clinch rivers to Speers Ferry, a distance of 39.5 miles, estimated to cost $10,400,000.

The commission's order, dated June 3, 1924, made the development of this route a condition to the approval of the lease and ordered the L. & N. to apply for a certificate of public convenience and necessity, covering the construction of the new lines required, within 12 months. Upon subsequent representations by the carrier, the commission granted a certificate for the Chevrolet-Hagans line and acquiesced to a request for a suspension of the requirement of the construction of a line from Ulvah to Chad and also accepted in lieu of the Hagans-Speers Ferry line, an arrangement perfected by the railroad for a connection with the Clinchfield at Miller Yard through the use of the Interstate Railroad from Norton on the L. & N. to Miller Yard, a distance of about 18 miles.

An Interesting Location Problem

The selection of a route for a cutoff connecting the Harlan and Norton lines of the Cumberland division presented an interesting location problem. In addition to the requirement of a connection with the Norton line, it was necessary to keep in mind the ultimate objective of an extension to the Clinchfield at Speers Ferry. It was also desirable, of course, that the line should have its northern end near Harlan, the center from which the various coal branches in the Harlan field radiate.

Another factor was the physical structure of the territory to be occupied. Cumberland mountain is paralleled on each side by a valley that separates it from lower, secondary ridges. The valley on the north side is occupied by Martins Fork, flowing from the west and its tributary, Cranks creek, flowing from the east, Martins Fork breaking through the secondary ridge near its confluence with the latter, whence it follows a winding course to a junction with Clover fork at Harlan. South of the mountain, the situation is somewhat different. Here the parallel valley, which is followed by the Norton line, is occupied by a series of streams which flow parallel to the valley for various distances and then break through the foothills to join the Powell river at intervals along the valley. Hardy creek, which flows toward the Powell from a point near Hagans, Va., offered the most favorable line of approach from



Profile of the Line at the Hagans Tunnel

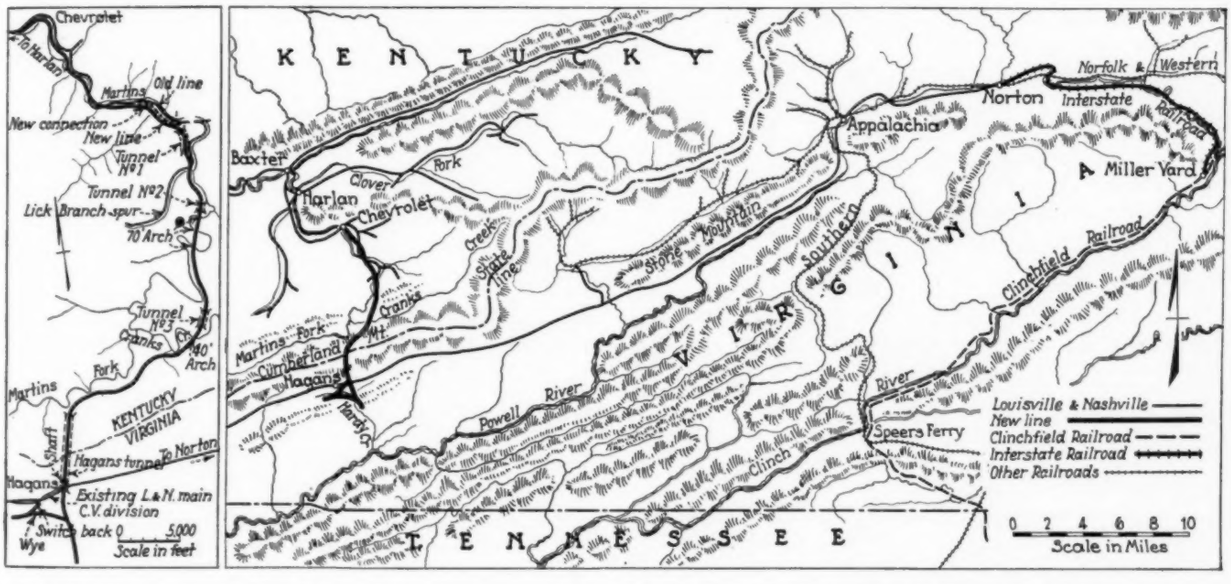
Typical Construction View Along Martins Fork Showing Cut Across the Shoulder Between Two Crossings of the Stream

the south. Accordingly, it was decided to locate the line as an extension of the Martins Fork branch of the L. & N., the necessary development for a 0.5 per cent grade to the summit elevation of the mountain crossing, bringing the starting point back to Chevrolet, a station which is located about five miles south of Harlan.

The determination of the summit elevation was influenced by conflicting requirements at the south end of the line. Here the existing line is supported on the mountain slope at a considerable elevation above the floor of the valley. Furthermore, the valley on the south side of the mountain at its lowest point is nearly 50 ft. higher than the valley on the north side. There was, of course, ample opportunity to develop enough distance to attain the elevation of the old line by following west along Martins Fork, a plan which would have resulted in a shorter tunnel through the backbone of the mountain. But this would have produced an unfavorable situation for the continuation of the line to Speers Ferry for it would have meant not only that the line would start at an excessive elevation above the valley of Hardy creek, but it would also introduce additional distance. For this reason, it was decided to fix the location and elevation of the mountain crossing so as to afford the most favorable starting point for the future continuation of the line down Hardy creek toward the Powell river. The summit in the line was established at Elevation 1432.5, at a point 1,200 ft. south of the south portal of the Hagans or summit tunnel. This summit was later lowered about a foot and moved 800 ft. farther south in order to avoid unfavorable rock in the south end of the tunnel. This changed the grade through the tunnel from 0.4 per cent to 0.3 per cent. This location resulted in a tunnel 6,215 ft. long, with a track grade at the south portal that is 100.7 ft. lower than the elevation of the old line where it crosses over the tunnel. The south portal is at Elevation 1427.8, the north portal at Elevation 1408.8, while the top of the mountain is at Elevation 2706.

Temporary Connection With Old Line

This arrangement introduced the problem of a connection between the new line and the old one, which was solved by introducing a wye to the west from a point on the new line 2,820 ft. south of the south portal, in combination with a switch back. Both the wye and the switch back are on a grade of 1.25 per cent, compensated, this being the ruling grade on the Norton line. A 4,752-ft. tail track with two 3,000-ft. passing



Detailed and General Maps of the Chevrolet-Hagans Line. The Small Scale Map (Right) Shows the Connection with the Clinchfield via the Interstate Railroad

tracks is provided south of the wye, while a 3,000-ft. tail track is provided at the switch back. Although this arrangement necessitates a back-up movement through the wye track and introduces additional distance as compared with a wye to the east, it avoids reversing the direction of the train in moving from Harlan to Norton, or vice versa. Whenever the Speers Ferry Line is completed, this wye may be extended westward to a connection with the main track and thereby form a direct connection for trains moving from Speers Ferry and thence westward through Cumberland Gap.

Description of the Line

The new line occupies the valley of Martins Fork for most of the distance from Chevrolet to the north portal of the tunnel through Cumberland mountain. For the first four miles, it follows the general location of an old coal spur, but at a considerably higher elevation. Where the two locations conflicted, it was necessary to abandon the old line and provide a suitable runoff from the higher grade of the new line down to a connection with the coal line. However, in advance of this it was necessary to provide a temporary location for the coal line, so that it could be kept in operation during construction.

Martins Fork follows an exceedingly winding course and to avoid curvature in excess of a maximum of six degrees, it was necessary to introduce six crossings of the stream in addition to cutoffs through the shoulders on the convex sides of the valley, two of which required tunnels 1,180 ft. and 360 ft. long respectively. The remainder of these cutoffs are in cuts as much as 100 ft. deep on the upper slope. On the other hand, the grade of the roadbed relative to the floor of the valley is such as to require a number of fills 70 to 75 ft. high.

Some six miles above Chevrolet, Martins Fork makes a wide detour to the west, which is avoided by breaking through a mountain spur with a tunnel 1,100 ft. long to reach the valley of Cranks creek, which is followed until it merges with Martins Fork. The remainder of the line is supported against the side of the Cumberland mountain to the portal of the tunnel.

The total grading amounts to 1,300,000 cu. yd. of excavation, which is rather well distributed over the entire length of the line. The heaviest mile is just south of tunnel No. 2, totaling 178,000 cu. yd., of which 129,000 cu. yd. was rock and 23,000 cu. yd. was loose rock. The largest individual cut involved the removal of 71,900 cu. yd. in a distance of 1,000 ft., while the largest fill, that over Cranks creek, is nearly 1,500 ft. long and contains 130,000 cu. yd.

As is frequently the case on new line construction in rugged country, the absence of highways for the transport of construction equipment imposed a difficult problem and exerted a pronounced influence on the construction program. It also led to an expedient not often adopted in these days, that of building stone box culverts for the smaller waterway openings on a considerable portion of the line.

From Chevrolet to the place where the Lick branch spur leaves the main valley of Martins Fork, a distance of about four miles, rail transportation was available not only for grading equipment but also for the delivery of the girder spans for the three lower crossings of Martins Fork. For a distance of a mile beyond the diversion of the Lick branch line, the transportation problem was solved by building a standard-gage extension of this spur along the bottom of the valley, past the site of the fourth crossing of Martins Fork and terminating at the fifth crossing. This permitted concrete materials for the 70-ft. arches at these two crossings to be delivered at the sites well in advance of grading operations. A third 70-ft. arch was built at the sixth crossing, a rail distance of only 1,300 ft. from the fifth crossing, but work had to be deferred here until the cut between the two was taken out and track was laid on the new roadbed to this point from a temporary connection with the coal spur south of tunnel No. 1.

An Ingenious Design of Filling Trestle

To avoid loss of the trestle in the event of a flood in the stream, the contractor employed a design utilizing the long logs supported on four lower-story bents, these logs having a sufficient beam strength to support the upper story (without live load) in the event that the two center bents were washed out.

Beyond the end of this construction spur, all grading and construction equipment and all other supplies, had to be handled overland, the bed of the creek at many points proving more satisfactory for this purpose than existing roads and trails. All bridge work in this territory was confined to stone boxes except a 40-ft. arch across Cranks creek, and work on this was deferred until track could be laid and the materials delivered by train. Another factor which influenced this policy was the fact that no materials suitable for concrete aggregates were available locally.

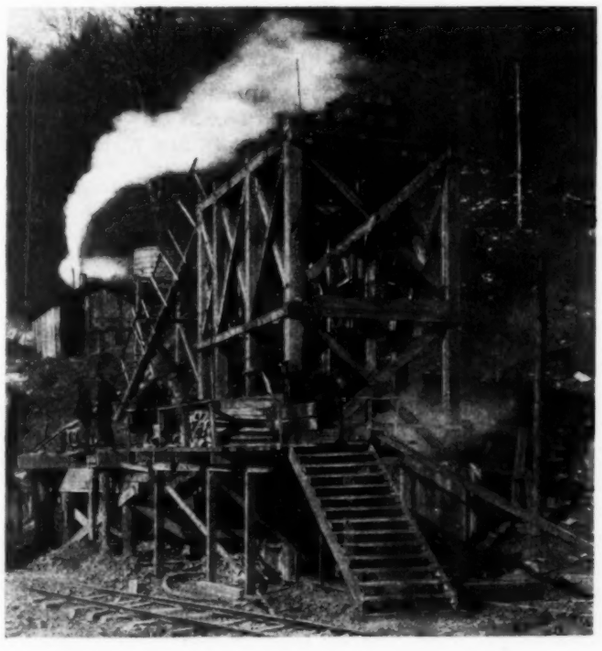
Besides the four arches and the three girder spans mentioned above, bridge work on that portion of the line south of the summit tunnel included an undercrossing for the Lick branch spur, which consisted of a concrete structure providing 22 ft. vertical clearance and made wide enough to give a side clearance on a 10-deg. curve equivalent to 8 ft. on tangent. South of the tunnel, transportation was a more simple matter and greater use was made of concrete in proportion to the length

of the line. In addition to 10 small box culverts, there are 2 waterway arches and 3 highway undercrossings. One of these is a double-deck structure providing a 20-ft. by 14-ft. opening for a highway over a double concrete box carrying a waterway. There are no public highways crossing at grade; public roads were relocated or passed beneath the track.

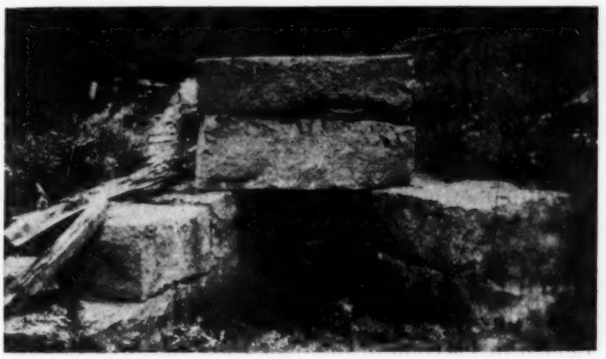
In conformity with the established policy of the Louisville & Nashville, the grading on the north 3.22 miles of the new line, which paralleled or overlapped an operated line, was done by company forces. The concrete work for bridges in this territory was done under contract by the F. W. Graham Company of Pineville, Ky., all track being laid by railroad company forces. All other work was handled under a general contract by W. W. Boxley & Co., of Roanoke, Va. Standard-gage equipment was used on the company work and three-foot gage equipment on the grading done by the contractor, except that some standard-gage equipment was used south of the summit tunnel. The excavating equipment varied as to both size and character. In one cut the contractor used a combination of two Osgood "whirlys" and three trains of eight four-yard cars each, with a track layout such that the trains would be spotted alternately for one shovel and then for the other, thus reducing the dead time of the shovels.

Guard Against Future Troubles

One of the distinctive features of this project is the painstaking effort being made to secure embankments that will be free from the ills resulting from unstable materials, soft foundations and inadequate drainage. For example, it was found that the site for a side-hill fill at the north approach to tunnel No. 3 was a bed of soft fire clay which promised serious danger of sliding when subjected to the embankment load. To avoid this, this bed of clay was excavated to a depth of 20 ft. for a roadway distance of 300 ft., the excavated material being cast on the downhill side, outside the neat fill limits. In the portal cut of this tunnel, a soft mud pocket was excavated nine feet below roadbed level



Hoisting Rig at the Top of the Hagans Tunnel Shaft



Stone Box Culverts Were a Unique Feature of This Project

to rock for a distance of 200 ft., this material being wasted outside the embankment section.

At another place, the embankment is virtually a parallel sided prism lying against a hill side on practically a 1½ to 1 slope, the depth from roadbed level to the toe of the slope being about 70 ft.—almost an ideal situation for a slip. To prevent this, the cleavage plane was broken up by cutting a bench at about mid-height of the embankment; in other words, a shovel, excavating from the slope and casting over the side, formed an 18-ft. shelf that consisted half of cut and half of fill.

Where the fills rest on soft swampy ground, the ground surface was ribbed; i. e., transverse trenches six feet wide and four feet deep crossing the site of the fill at intervals of 25 to 50 ft. were filled with loose rock before any filling was placed, care being taken to see that these under-drains were provided with suitable outfalls. Where cuts give promise of trouble, eight-inch tile drains are provided along each side at a depth of four feet below subgrade, with six-inch laterals, 20 ft. apart, connected into the longitudinals by means of tees.

South of tunnel No. 3 there is a fault, rock stratification south of that point being at a pronounced dip whereas to the north it is substantially horizontal. This fact had to be carefully considered, and to guard against slides in the rock cuts, special pains were taken to insure that all rocks of any strata cut through would be entirely removed where they sloped up away from the roadbed.

The Hagans Tunnel

While there are four tunnels on this line, the summit or Hagans tunnel, being so much longer than the others, comprises a much more important factor in the project. In fact, the Hagans tunnel is the key to the completion of the line. The material encountered is limestone, shale, sandstone, conglomerate and mixtures of these, together with ten seams of coal up to 30 in. thick. The strata encountered are all inclined at a dip of about 45 deg. and a strike of 65 deg. with the center line of the tunnel. Much of the material stands safely without timbering, although timbering was found necessary at various points in the length of the tunnel. But at the south portal the dividing line between the talus and solid rock is soft shale, a combination that promised trouble and did result in some delay to progress in spite of several special expedients. One was to lower the grade of the tunnel at the south portal, as previously mentioned, for the purpose of getting the wall plate and the extrados of the tunnel arch low enough to reach more stable material. Another was to build the portal complete in

the open and back fill it to reduce the danger of slides. A further expedient to insure more rapid progress, because of the slow rate of advance anticipated through the unstable material at the south portal, was to sink a shaft 158 ft. deep, 700 ft. north of the south portal, so that progress on the main heading would not be contingent upon the slow advance from the portal.

All of the tunnelling was done by the full-top heading method, except that, for 300 ft. from the south portal, it was necessary to drift for the wall plates. In some places within this distance, the shale encountered was so soft that it could be excavated readily without explosives by using pneumatic concrete breakers. Although this section of the tunnel was timbered throughout, it was considered prudent to place a concrete lining at once for a length of 629 ft. from the south portal.

In stable rock the excavation of the heading involved the drilling of from 32 to 36 holes, of which six cut holes in the center were exploded direct, followed in turn by other groups of holes with No. 1, No. 2 and No. 3 delays. Ten-foot steels were used for the cut holes and eight-foot steels for the others, each shot pulling from six to eight feet. An average of about 200 lb. of 40 per cent gelatin was used per charge. A Hoar mucker was used to load 36-in. gage cars, which were pushed downhill by hand from the north heading and pulled uphill with mules at the south heading. Until the tunnel headings were holed through, a ventilating system was provided in the form of a 20-in. DuPont vent tube extending in from each portal, through which air was driven by Sturtevant blowers.

The bench is being taken out in two lifts, in each case using five straight holes in a row with the rows four feet center to center. Two rows of holes are shot simultaneously with delays on the rear row of holes. Air shovels are used for the mucking, loading three-foot gage cars that are hauled by Plymouth gasoline locomotives at the north end and by coke-burning steam engines at the south end. Cars are spotted at the shovels by mules. At the south portal, a variation from conventional practice is the dumping of the muck cars into standard-gage cars for disposal in embankments.

Owing to the availability of rail transportation at the south end, the contractors main power plant was set up at the Hagans portal, it being necessary for the contractor to rebuild a country road over the mountain, six miles long, to deliver equipment and supplies to the north portal. Compressors to supply air for drilling were installed at each portal, but electric current for lighting and ventilation was generated at the south portal and transmitted over the mountain to the north portal.

Work on the tunnel was started on June 16, 1928, and the headings between the shaft and the south portal met on February 22, 1929. The headings from the north and south ends met on August 6, 1929. Since that time compressed air has been furnished for the bench work from the south portal power plant. The tunnel will be finished early in 1930, by which time grading and track laying and surfacing will be finished to the tunnel from both ends of the line.

The location and construction of the line have been under the direction of G. R. Smiley, chief engineer of construction of the Louisville & Nashville. The preliminary survey was made by W. S. Morton and the final location by G. W. Feagin, locating engineers. The resident engineers are J. B. Cochran, C. A. Smith and H. E. Kloss. The track work is being done by company forces under the direction of G. J. Giles, supervisor of track.

Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading in the week ended February 1 showed some improvement in spite of continued severe weather in some parts of the country. The total was 898,894 cars, a decrease of 48,260 cars as compared with the corresponding week of last year, but a decrease of only 27,368 cars as compared with 1928. Loading of live stock and coal showed increases as compared with the corresponding week of last year, but miscellaneous freight was off 26,432 cars. The Pocahontas and Northwestern districts showed increases as compared with last year and the Allegheny and Pocahontas districts showed increases as compared with 1928. The summary, as compiled by the Car Service Division of the American Railway Association, follows:

Revenue Freight Car Loading

Week Ended Saturday, February 1, 1930

Districts	1930	1929	1928
Eastern	210,962	225,650	211,660
Allegheny	183,840	190,311	180,105
Pocahontas	59,723	57,585	50,768
Southern	132,368	149,028	149,277
Northwestern	107,756	107,104	120,488
Central Western	133,810	139,515	138,302
Southwestern	70,435	77,961	75,662
Total Western Districts	312,001	324,580	334,452
Total All Roads	898,894	947,154	926,262
Commodities			
Grain and Grain Products	44,563	49,736	53,919
Live Stock	28,088	27,514	35,262
Coal	213,833	211,093	180,656
Coke	12,155	12,481	11,368
Forest Products	48,422	59,416	69,412
Ore	7,682	8,671	7,888
Merchandise L. C. L.	238,106	245,766	249,094
Miscellaneous	306,045	332,477	318,663
February 1	898,894	947,154	926,262
January 25	862,621	926,474	902,664
January 18	847,353	931,861	884,683
January 11	863,191	914,438	907,301
January 4	776,259	798,682	754,247
Cumulative total, 5 weeks	4,248,318	4,518,609	4,375,157

The freight car surplus for the last week of January averaged 392,552 cars, including 217,024 box cars, 123,469 coal cars, 24,340 stock cars and 13,827 refrigerator cars.

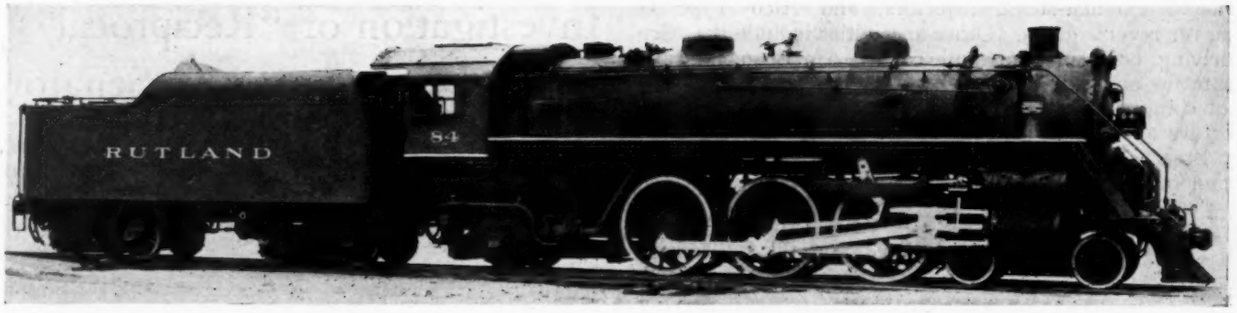
Car Loading in Canada

Revenue car loadings at stations in Canada for the week ended February 1 totaled 58,628 cars, an increase over the previous week of 316 cars and a decrease of 2,258 cars from the same week last year.

	Total Cars Loaded	Total Cars Rec'd from Connections
Total for Canada		
February 1, 1930	58,628	38,963
January 25, 1930	58,312	36,615
January 18, 1930	55,819	35,416
February 2, 1929	60,886	41,222
Cumulative Totals for Canada		
February 1, 1930	268,818	174,880
February 2, 1929	281,709	188,224
February 4, 1928	308,376	179,463

THE CANADIAN NATIONAL recently completed the painting of the Quebec bridge over the St. Lawrence river. The time required was three years, the number of men, 35; and the amount of paint, 7,800 gallons. The area covered with paint totalled 210 acres. The central span of this bridge is 1,800 ft. long.

A TRACTOR, fitted with buffers to make the vehicle usable in pushing freight cars, is illustrated in the Railway Gazette (London) of January 17. It is in service on the P. L. A. docks, London. The distinctive feature is an elevated transverse buffer beam, with the round disk buffers fixed a proper distance apart; this beam being necessary because the buffers on the freight cars are higher than the frame of the tractor.



Rutland 4-6-2 Type Built by the American Locomotive Company

Pacific Type Locomotives for the Rutland

Placed in passenger service between Troy and Rouses Point—Scheduled time reduced 30 min.

THE Rutland has placed three 4-6-2 type locomotives in passenger service between Troy, N. Y., and Rouses Point, which has enabled that road to reduce the scheduled time of northbound through trains from New York to Montreal, Que., by 30 min. The purchase of these locomotives, which were built by the American Locomotive Company, followed the completion of a program of strengthening the bridges and improving the main-line track between North Bennington, Vt., and Rouses Point. The new locomotives have a rated maximum tractive force of 43,800 lb., which enables them to handle trains of 12 and 13 cars without helper service over any portion of the line. The boilers carry a pressure of 215 lb. per sq. in. The cylinders are 25 in. in diameter with a stroke of 28 in. The diameter of the driving wheels is 73 in.

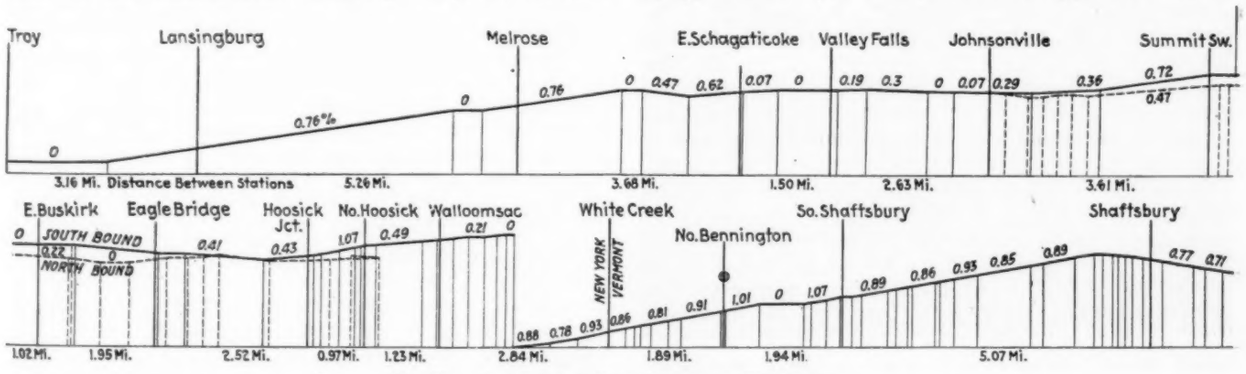
Prior to placing the new power in service, the Rutland used 4-6-0 type locomotives with 69-in. driving wheels which develop a tractive force of 32,430 lb. It was necessary, with this power, to double-head trains north from Troy to Shaftsbury, Vt., with trains comprising more than nine cars.

The profile of this portion of the line is shown in one of the illustrations. Leaving Troy, northbound trains climb a .76 per cent grade for about nine miles. A short grade of .72 per cent grade is encountered about two miles north of Johnsonville, N. Y., and a short undulating grade occurs between Hoosick Junction, N. Y., and North Hoosick in which the steepest climb is 1.17 per cent. From that point to Shaftsbury, except for about two miles, there is a continuous upgrade for a distance of 11¾ miles, in which the ruling grade is 1.2 per cent.

This portion of the line governs the performance of locomotives in northbound passenger and freight service. Tracks of the Boston & Maine are used between Troy and White Creek, N. Y. The distance from Troy to Shaftsbury is 39.33 miles.

Before the schedules were changed "The Mount Royal," train No. 51, left Troy at 12:52 a.m. and was due in North Bennington, 1.9 miles south of Shaftsbury, at 1:56 a.m. With the new schedule, this train leaves Troy at 12:42 a.m. and arrives at North Bennington at 1:40 a.m., shortening the scheduled running time over this portion of the line by six minutes.

The principal dimensions and weights of the new power are shown in the table. These locomotives are equipped with Type E superheaters, Type BK stokers,



Profile of the Line from Troy to Shaftsbury

Elesco exhaust-steam injectors, and Alco Type G power reverse gears. Other specialties include the Alco driving box spreader and cellar, American multiple throttle, and two Westinghouse 8½-in. cross-compound air compressors. The trailing truck is designed for the future application of a booster.

Steel castings were extensively used in the construction of both the engine and tender. The engine- and trailing-truck frames, the tender frame and tender trucks, including the bolster, are of Commonwealth design. The locomotive bed is a Commonwealth unit steel casting and is cast integral with the cylinders, steam chests, deck castings, pump brackets, etc. The tender is carried on two four-wheel trucks and has a capacity for 11,000 gal. of water and 14 tons of coal.

Principal Dimensions and Weights of the Rutland 4-6-2 Type Locomotives

Railroad	Rutland
Builder	American Locomotive Company
Service	Passenger
Rated maximum tractive force	43,800 lb.
Weight on drivers ÷ max. tractive force	4.02
Cylinders, diameter and stroke	25 in. by 28 in.
Valve gear, type	Walschaert
Weights in working order:	
On drivers	175,500 lb.
On front truck	59,000 lb.
On trailing truck	58,000 lb.
Total engine	292,500 lb.
Total tender	202,300 lb.
Total engine and tender	494,800 lb.
Wheel bases:	
Driving	13 ft. 8 in.
Total engine	36 ft. 11 in.
Total engine and tender	72 ft. 1½ in.
Wheels, diameter outside tires:	
Driving	73 in.
Front truck	36 in.
Trailing truck	43 in.
Boiler:	
Steam pressure	215 lb.
Fuel, kind	Soft coal
Diameter, first ring, inside	76⅝ in.
Firebox, length and width	114⅛ in. by 84¼ in.
Tubes, number and diameter	44—2¼ in.
Flues, number and diameter	168—3½ in.
Length over tube sheets	21 ft.
Grate area	66.8 sq. ft.
Heating surfaces:	
Firebox	207 sq. ft.
Arch tubes	27 sq. ft.
Tubes and flues	3,760 sq. ft.
Total evaporative	3,994 sq. ft.
Superheating	1,808 sq. ft.
Combined heating surface	5,802 sq. ft.
Tender:	
Water capacity	11,000 gals.
Fuel capacity	14 tons

* * *

Inlaid Markers to Guide Passengers at the Pennsylvania's Broad Street Station, Philadelphia

Investigation of "Reciprocal Buying" Proposed by Senator

WASHINGTON, D. C.

THE subject of "reciprocal buying" was brought before the Senate on February 6 in a resolution introduced by Senator Brookhart, of Iowa, characterizing the practice as an "illegal and immoral system of rebating . . . affecting the $2,000,000,000 of annual purchases of supplies of American railroads" and calling for an investigation by the Senate committee on interstate commerce of "rebating in every form directly or indirectly that affects the common carriers of the United States."

The resolution says that "this system is responsible for destroying small competitors, foisting inferior equipment on railroads at the expense and to the detriment of the public while enriching grafting officials of the guilty companies." In introducing it Senator Brookhart said: "It is now called to my attention that an indirect system has been inaugurated by the big packing companies, a system of reciprocal buying and selling, as it is called. They start a manufacturing company to manufacture some article which is used by the railroads and then they force the sale of that article to the railroads by the fact that they have a large number of cars that are furnished to the different railroads for the shipment of commodities. In that way they secure indirectly a rebate. The charge is so specific and authentic that I think it ought to be investigated, and I offer a resolution to that effect for reference to the committee on interstate commerce."

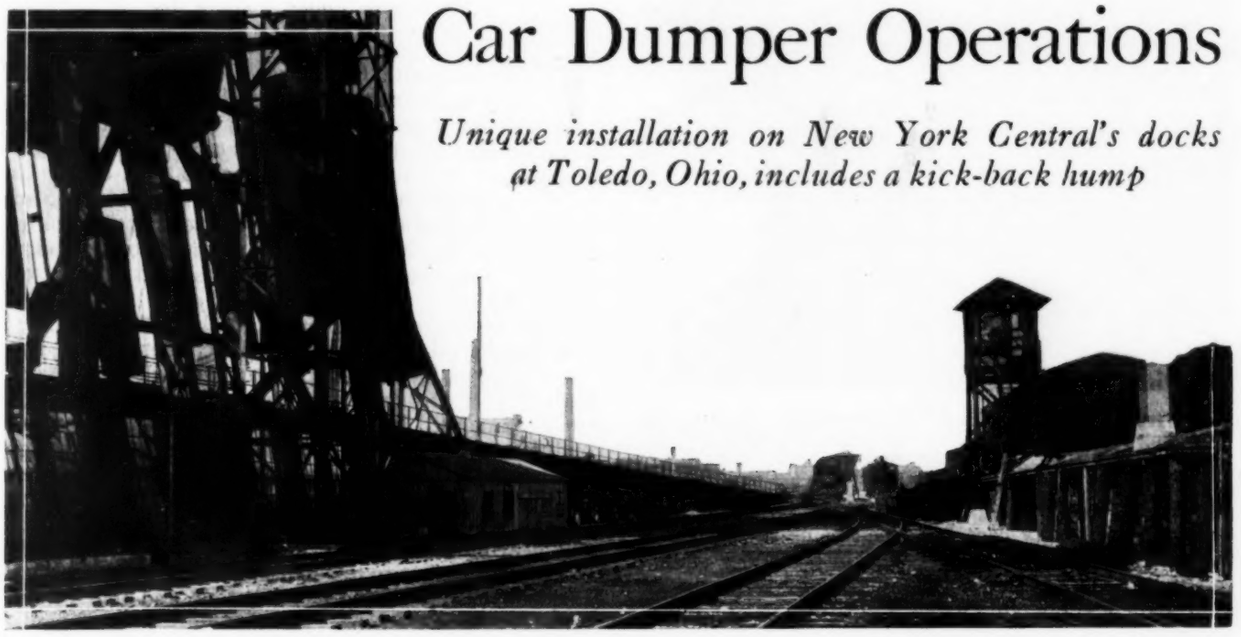
Without referring to the formal investigations by the Interstate Commerce Commission and the Federal Trade Commission that have been underway for several months, or to the existence of the practice in relation to other than railroad purchases, the resolution cites "two specific cases" as "examples of the methods being used by many great interests to violate the law by forms of commercial bribery".

Reference is made to the act to regulate commerce as prohibiting "railroad rebating", to the Federal Trade Commission act as prohibiting "unfair methods of competition", and to the act of 1921 as prohibiting the packers from engaging in "unfair, unjustly discriminating or deceptive practice". The resolution then quotes a letter addressed by Swift & Co. to railroad officials saying that "we expect our railroad friends to use certain articles of railway equipment manufactured by a company owned by the Swift family, on a reciprocity basis", which was published in the *Railway Age* of February 2, 1929, and adds that "officials of Armour & Co., are using the so-called Waugh Co. in a similar conspiracy."

The Interstate Commerce Commission has assigned its investigation of the use of traffic to influence railway purchases to its Bureau of Service, which had had agents collecting data for several months. The Federal Trade Commission has assigned for hearing at Chicago on February 17 before Examiner John W. Addison, its formal complaint against the Mechanical Manufacturing Company, in which it charged unfair methods of competition in inducing and compelling railways to purchase draft gear and other equipment by promises and assurances of freight traffic to be shipped by Swift & Co., or by threats of its withdrawal. The commission will be represented by Attorney Edward S. Haycroft.

Car Retarders Facilitate Car Dumper Operations

Unique installation on New York Central's docks at Toledo, Ohio, includes a kick-back hump

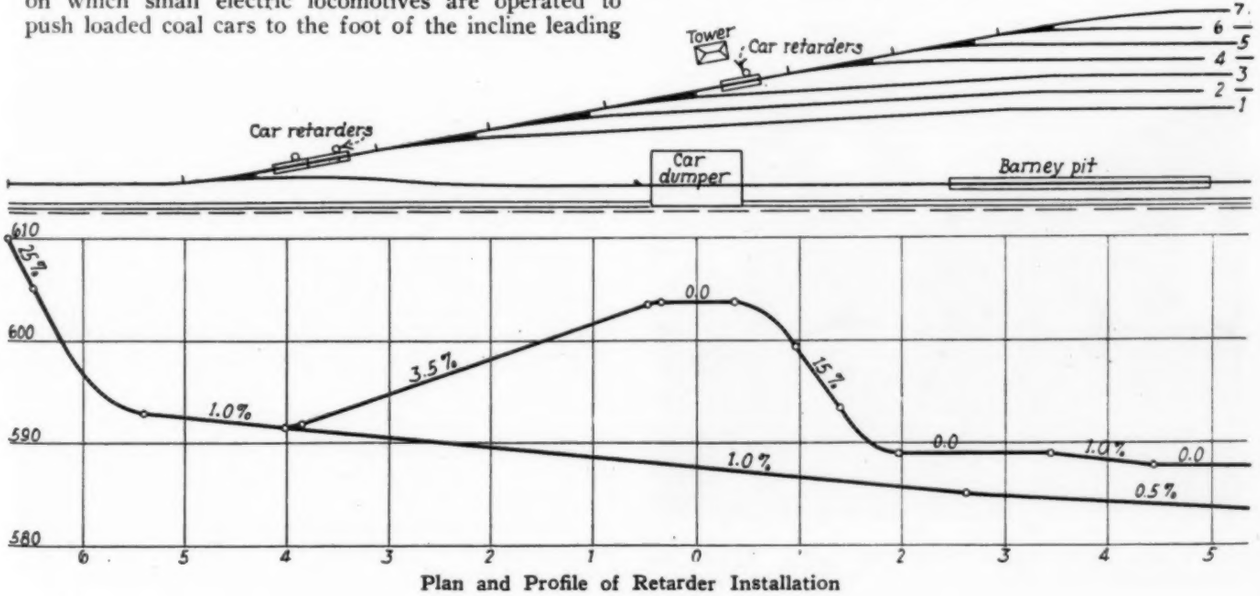


View of Control Tower, Retarders and Power-Operated Switches, Showing Car on "Kick-Back" Hump

THE New York Central has recently completed a unique installation of the General Railway Signal Company's all-electric car retarders and power switches, which has facilitated the handling of coal cars at the car dumper on the dock at Toledo, Ohio. Large quantities of coal from Kentucky and West Virginia are transported over the New York Central Lines and connections, and delivered to a yard at Toledo, located near the dock.

A 3-ft.-gage track, located parallel to and in close centers with the standard rails, is provided in this yard, on which small electric locomotives are operated to push loaded coal cars to the foot of the incline leading to the car dumper. An electric "mule" pushes one car at a time up the incline to the car dumper deck, where a one-unit car retarder stops and holds the car of coal until it is clamped down to the rails.

After the car has been elevated and dumped, it is returned to the deck, released and, without a rider, is started down the incline on the other side, trailing through the spring switch and going up the "kick-back" incline, which is built on a 25 per cent grade, as far as its momentum will carry it. The car then starts back in the opposite direction, and at the foot of



Plan and Profile of Retarder Installation

View from the "Kick-Back" Hump—Note Empty Car Coming Down Incline from Car Dumper—Spring Switch in Foreground

the grade, is diverted by the spring switch to the yard provided for empty cars, its speed being controlled by means of all-electric car retarders in a manner similar to the usual classification yard operation. Power-operated switches, operated from a nearby control tower, divert the cars to their proper tracks.

This unusual application of a retarder system has increased the speed of loading the lake vessels, and at the same time decreased the costs, due to the elimination of switchmen and car riders. The engineering work was done under the direction of J. A. Stocker, chief engineer, New York Central, Ohio Central Lines, while the operation of the property is under the direction of F. H. Burnett, superintendent of the Ashtabula & Buffalo Dock Company, Toledo, Ohio.

* * *

The Lackawanna's Three-Track Lift Bridge Across the Hackensack River Between Newark, N. J., and Hoboken

Rules for Consolidation Procedure Are Adopted

By H. F. Lane

Washington Editor, *Railway Age*

WASHINGTON, D. C.

THE Interstate Commerce Commission on February 10 indicated that it is now in a position, for the first time since the passage of the transportation act of 1920, to receive and act upon applications for approval and authorization of actual consolidations of railway properties under paragraph 6 of section 5 of the act, as distinguished from acquisitions of control by stock ownership, lease, or other method not involving complete consolidation, such as it has been passing on for several years under paragraph 2 of section 5.

At the same time the commission also indicated, however, that it will still deal with applications for acquisition of control filed under paragraph 2, whether or not they are in accordance with the complete consolidation plan promulgated in December, if they state terms and conditions on which the commission may act, although applications for authority for complete consolidation must be in harmony with the plan or be accompanied by motions for modification of the plan. By setting for early hearing the applications of the Pittsburgh & West Virginia for authority to acquire control of the Western Maryland and Wheeling & Lake Erie and that of the New York, Chicago & St. Louis for authority to acquire control of the W. & L. E., the commission also gave evidence that it expects at least to consider the building up of systems piece-meal and will not at this time require applications covering a complete system such as those provided for in the plan.

The commission announced on February 10 the adoption of an addition to its rules of practice outlining the procedure to be followed in connection with the making of applications for authority to consolidate which emphasizes that there are now new factors in the situation which did not exist prior to the promulgation of the plan. These rules will govern in case any roads are ready to ask permission to consolidate into a new corporation. It is understood, however, that the commission expects to continue to be busy with applications for unification under paragraph 2 for some time to come, unless the law is amended as proposed in bills long pending in Congress, because the provisions of the law relating to actual consolidations in the technical sense are considered unworkable in many ways.

Applications for authority for an actual consolidation come under paragraph 6 of section 5, following the provisions in paragraphs 4 and 5 which relate to the adoption of the plan. Paragraph 6 makes it lawful for two or more carriers "to consolidate their properties, or any part thereof, into one corporation for the ownership, management and operation of the properties," provided the proposed consolidation is "in harmony with and in furtherance of the complete plan of consolidation" mentioned in paragraph 5 and is approved by the commission.

Details of Financing Required

The new rules require the applicants, among other information, to show the proposed capitalization, the manner in which the properties of each applicant are to be acquired, and the price to be paid therefor, with copies attached of any contract or contracts entered into between the applicant carriers, or any of them, with

respect to the proposed consolidation. They are also to state the value of the properties owned by each applicant, which are proposed to be consolidated, as found by the commission, and separately the net cost of additions and betterments made after the date of valuation. This is because of the provision in the law that the outstanding securities of the corporation which is to become the owner of the consolidated properties shall not exceed the value of the consolidated properties as determined by the commission.

Another requirement is a statement as to "whether there are any intercorporate relationships, through holding companies, ownership of securities, or otherwise, between the applicants, or any of them, or between any of the applicants and other carriers, at the time of making the application, and if so, the nature and extent of such relationships."

Reference is also required to the portion or portions of the commission's consolidation report applicable to the proposed consolidation, with supporting statement to show that the proposed consolidation is in harmony with and in furtherance of the plan of consolidation in the report, "or any amendment thereof." If the proposed consolidation is not in harmony with said plan of consolidation, then the applicants shall move to amend the consolidation plan accordingly. Reasons are to be stated, in general, why the proposed consolidation will be in the public interest, but full details and particulars are to be reserved for presentation at the hearing.

The rules also state the character of statistical information and maps required and the exhibits to be filed with an application, including copies of the resolutions of stockholders or directors approving the proposed consolidation.

Asks Withdrawal of Cases Now Pending

The new rules of practice are not made applicable to the applications for authority to acquire control under paragraph 2 of section 5 of the law, some of which are now pending before the commission. Some of these are in harmony with the plan and some are not. As reported last week, Director Mahaffie of the Bureau of Finance has written letters to the Baltimore & Ohio, Chesapeake & Ohio, Delaware & Hudson and Wabash, suggesting the withdrawal or dismissal of their general unification applications which were filed last year on the ground that hearings on them would appear to be useless in view of the fact that the commission has now promulgated a plan with which they are not fully in accord and that they do not set forth proposed terms and conditions on which the commission could act. He gave the roads, however, an opportunity to express their views before making a recommendation to the commission.

That the suggestion that these applications should be withdrawn does not apply to all applications under paragraph 2 of section 5, however, is indicated by the fact that the commission on February 10 set for hearing several applications for authority to acquire control which propose definite terms and conditions, although one of them is not in harmony with the plan. The application of the Pittsburgh & West Virginia for authority to acquire control of the Western Maryland, which was supplemented after it was originally filed with a proposition to purchase the stock in the Western Maryland held by the Baltimore & Ohio at the price paid by the B. & O., was set for hearing before C. V. Burnside, assistant director of the Bureau of Finance on April 9. Another application of the Pittsburgh & West Virginia for authority to acquire control of the Wheeling & Lake Erie and the rival application of the New York, Chicago & St. Louis for authority to acquire control of the same road, was set for hearing before Mr. Burnside on March 10. Both of these applications also state proposed terms. The Pittsburgh & West Virginia, Western Maryland and Wheeling & Lake Erie were all placed in the plan in the same system, together with the Wabash and other roads. The Nickle Plate application, however, is not in accord with the plan and the commission had ordered the Baltimore & Ohio, New York Central and Nickle Plate to divest themselves of their stock in the Wheeling & Lake Erie. The B. & O. and N. Y. C. sold their stock to the Alleghany Corporation and control of the W. & L. E. is now owned by the Nickle Plate but is held by a trustee awaiting final decision of the commission.

Hugh M. Tate Appointed to I. C. C.

After several weeks of diligent search on the part of the White House advisers for a Republican from Tennessee who would satisfy the President as a member of the Interstate Commerce Commission and at the same time stand a chance of being confirmed by the Senate, President Hoover on February 8 sent to the Senate the nomination of Hugh McCall Tate, a lawyer of Knoxville, Tenn., to succeed to the place made vacant by the expiration of the term of Richard V. Taylor, of Mobile, Ala., at the end of 1929.

Because of the bitter animosities created by the lake cargo coal rate case and events connected with it there were some difficulties involved in the selection of a satisfactory candidate from this section. Apparently it had been decided that it was necessary not only to take cognizance of the idea which has been gaining ground in political circles for several years that commissioners should be selected geographically, but also to recognize the comparatively recent Republicanism of Tennessee, which is farther south than the home of the southernmost commissioner for many years but not so far south as the residences of most of the Democratic Senators.

Also, to preserve the usual composition, so far as political party lines are concerned, of the commission, which under the law may have not more than a majority of one political party, the vacancy called for a Republican, although Mr. Taylor was a Democrat. President Coolidge had appointed P. J. Farrell, a Democrat from Vermont, in the place of a retiring Republican. This temporary shift had been overlooked by many of the Democratic Senators from southern states, most of whom had been urging candidates to the President's attention, a fact which may account from some of the opposition manifested when the President announced the appointment of Robert M. Jones, of Knoxville, last month. The appointment was withdrawn at Chancellor Jones' request after the Senate committee on interstate commerce had postponed action on his confirmation for an investigation.

The idea of recognizing sectional demands in making appointments to the commission was strengthened somewhat by President Coolidge, possibly to head off threatened legislation to require a specific geographical selection of commissioners, when he announced that he would fill ensuing vacancies by appointments from the South, the Southwest, and Pennsylvania, whose representatives in Congress had been complaining rather vigorously that their sections had not been "represented" on the commission. At that time C. C. McChord, from Louisville, Ky., was a member of the commission, but Louisville appeared too far north to some of the states, especially after he had been on the commission for many years.

However, the appointment of Mr. Taylor, from Alabama, seemed to satisfy neither the Southeast or the Southwest. President Coolidge appointed Cyrus E. Woods, from Pennsylvania, but he was not confirmed by the Senate, and later he appointed Ezra Brainerd, a former Vermonter, from Oklahoma.

When President Hoover was confronted recently with two vacancies he announced his intention of appointing a man from the inter-mountain country to succeed Johnson B. Campbell and one from one of the Southern states to succeed Mr. Taylor. This promise has now been fulfilled by the appointment of William E. Lee, of Idaho, and by the successive appointments from Knoxville. It is rumored that an organization which had urged upon the President the appointment of an engineer to the commission was asked to submit the names of Republican engineers from Tennessee. Also Ben W. Hooper, formerly chairman of the Railroad Labor Board, was reported to be under consideration at the White House for a time and the fact attracted some protests from labor organizations.

According to the statement made public at the White House Mr. Tate, in addition to having been born at Morristown, Tenn., on September 15, 1882, has practiced law in that state for many years and from 1918 to 1920 was judge of the eleventh chancery division of Tennessee. From 1905 to 1909 he was county attorney of Hamblen county. He was graduated from the University of Tennessee in 1902 and received his B. L. degree in 1903. From 1903 to 1909 he was a member of the firm of McCanless and Tate at Morristown, from 1909 to 1910 a member of the firm of Luck, Fowler, Andrews and Tate at Knoxville and from 1910 to 1918 a member of the firm of Green, Webb & Tate, of Knoxville. Since 1920 he has been a member of the firm of Cates, Smith, Tate and Long. He has been a captain in the Tennessee National Guard and is trustee of the Lawson McGhee Library, at Knoxville.

The White House also made public a long list of endorsers including the governor, Senator Brock and ex-Senator Lea, of Tennessee, a number of state judges and local public officials, the president of the state bar association, representatives of several railroad labor organizations, presidents of colleges, newspaper publishers and others.

I. C. C. Recapture Program May Be Curtailed

The action of the House appropriations committee in failing to recommend an increase of $1,007,313 in the Interstate Commerce Commission's appropriation for valuation work, although it had been recommended by the Bureau of the Budget, may curtail considerably the "vigorous campaign for the collection of excess earnings" under the recapture clause which Commissioner Lewis told the committee "was one of the considerations for the granting of our request of over a million dollars increase in appropriation." It is still possible, however, to make an effort to have the item reconsidered when the appropriation bill is before the House.

No explanation has been advanced as to what the committee had in mind when it said it had disallowed the increase because of a "radical change of procedure" decided upon by the commission, and it is believed that the statement may have resulted from some misunderstanding. No information as to any radical change was obtainable at the commission, which had hoped for an appropriation of $3,547,313 for valuation. The amount recommended by the committee is $2,540,000.

Commissioner Lewis told the committee that 60 per cent of the staff of the Bureau of Valuation was working on valuations for recapture purposes, as well as a large part of the staff of the Bureau of Accounts. He said the work of bringing valuations down to date takes two forms, one under the valuation law, section 19a of the Interstate Commerce Act, and one under section 15a for recapture purposes. The commission in the O'Fallon case decided that valuations for recapture may be determined by a more "summary" process than that required under section 15a, but hastening the process for recapture purposes requires that some of the work be done over again under section 19a. After referring to the recapture work Commissioner Lewis said in his testimony before the committee: "In addition to that, we laid before the director of the Budget a matter which it is also provided by the law that we must administer, of bringing valuations down to date, and on our showing as to the needs of the commission, of carrying forward two such programs, and the incidental work which falls on the Bureau of Valuation, our request for an appropriation of $3,547,313 was granted in toto by the director of the Budget and the President and sent to you with his approval."

Tate Appointment Approved by Committee

Opposition to Tate's nomination was voiced in the Senate by Senator Black, of Alabama, who had also objected to the confirmation of Chancellor Jones, on the ground that "We in the South think we are entitled to a Democrat member of the Commission," and that the law firm of which Mr. Tate has been a member has been local counsel for the Southern as well as many other corporations, including telegraph, power, insurance, banking, real estate and coal companies. Senator McKellar, of Tennessee, although a Democrat, replied to these criticisms, saying that the head of the law firm had represented most of these corporate clients before Judge Tate became a member of it and that "Judge Tate is a judicially minded man of the highest character and in my judgment would be one of the ablest men on the Interstate Commerce Commission if he is confirmed."

The Senate Committee on Interstate Commerce on February 11 voted to recommend confirmation of the appointment after questioning Mr. Tate briefly as to his experience and views. He said he was very anxious to remove any thought that he had been "tainted" by any railroad connection, because his own practice had largely been anti-corporation and anti-railroad. The railroad and corporate business had largely been brought to the firm by its senior member. "The hardest test for me, if I am confirmed," he said, "will be the question of leaning back because this question has been raised." He told the committee in reply to questions that he had had no experience with nor any particular familiarity with rate-making, valuation or consolidation questions and that he had tried only about a dozen local cases for the Southern Railway and knew none of its commerce counsel. He said he thought his training would keep him free of prejudice and told the committee that for the next seven years he ought to be in the prime of his life and would be willing to work hard. He said he had been making nearly $20,000 a year as a lawyer. Asked how his name was suggested to the President, he said he understood that Senator McKellar had mentioned him; that he had urged another candidate of his own but that the President had asked for the name of "an outstanding lawyer" from Tennessee. Senator McKellar, who was present, said that this was correct except that Mr. Tate's name was not mentioned, and he emphasized that the President had asked for a Republican lawyer from Tennessee. Of the ten members of the committee present none voted against confirmation but Senator Smith, of South Carolina, did not vote.

B. & O. Control of B. R. & P. Authorized

WASHINGTON, D. C.

ACQUISITION of control of the Buffalo, Rochester & Pittsburgh by the Baltimore & Ohio, by purchase of 84.82 per cent of its outstanding stock for $14,263,216.07 from the Allegheny Corporation was authorized by the Interstate Commerce Commission on February 11. The authorization is on condition that the B. & O. continue for six months its offer to acquire the remaining outstanding shares at the same price, that routes and channels of trade via existing gateways shall be kept open, and that the B. & O. shall agree to abide by such findings as the commission may make or as may be made in an ancillary proceeding or arbitration with respect to the taking over or operation of the Mt. Jewett, Kinzua & Riterville.

The order, however, omits the condition recommended by C. V. Burnside, assistant director of the Bureau of Finance, in his proposed report, which would have required that the control of the B. R. & P. be held in such a way as to enable the commission to make a different disposition of the property later. This condition was suggested before the commission had promulgated its consolidation plan, which allocates the B. R. & P. to the proposed B. & O. system.

Replying to objections made by counsel for the Delaware & Hudson, which had previously sought to acquire control of the B. R. & P. and which in this case had offered to purchase the stock for cash, the commission points out that the application is in harmony with its plan and also that there is evidence in the record of sufficient probable public benefits to justify the control as proposed, regardless of the possible utility of a portion of the B. R. & P., as a part of the proposed new short route between New York and Chicago. The decision, therefore, removes the question as to whether the commission will allow an acquisition which is in harmony with its plan in advance of evidence as to whether the applicant will be able to obtain control of other roads allocated to its system. It is not now necessary, the report says, to consider the status of an application under paragraph 2 of section 5 for an acquisition which is not in conformity with the plan.

New Through Routes Available

Witnesses for the Baltimore & Ohio had testified at the hearing that the control will afford opportunity for economies through the increased co-ordination of operations of the two properties, which have had close relations for 30 years, estimated at over $600,000 a year. The Baltimore & Ohio also proposes to develop further the route from Buffalo to Baltimore by way of the B. R. & P. and its own line and to establish one-line rates where present tariffs provide increased rates for a two-line haul.

Another important consideration urged by the B. & O. was that through acquisition of control of the B. R & P. its plan for the establishment of a new short line between Chicago and New York will be promoted. This contemplates the use of the present line of the B. & O. from Chicago via New Castle to Butler, about 80 miles of the B. R. & P. from Butler to Dubois, Pa., existing lines or new construction to Williamsport, Pa., and the Reading and Central of New Jersey to New York. This would make a route shorter than any other between Chicago and New York except that of the Pennsylvania and would be only 4 miles longer than that. The company represented that establishment of this route would avoid the necessity of an expenditure on its lines just west of Pittsburgh of between $30,000,000 and $40,000,000.

As to the Mt. Jewett, Kinzua & Riterville, the report says the record does not justify any conclusion regarding the retention or disposition of any portion of its line. The discussion of the issues raised during the argument includes the following:

It cannot be conceded that a decision upon this application should be controlled by our action upon the application of the Delaware & Hudson looking to a lease of the B. R. & P. The reasons for that action were stated in the report 131 I. C. C. 750, but it may be mentioned here that the properties of the Delaware & Hudson and of the B. R. & P. had, and have, no direct connection, and their traffic and geographical relationships are not so close as those between the applicant and the B. R. & P. Further, the proposal in that case was to lease and not merely to acquire a controlling interest through stock ownership. The former method involves complete consolidation or operations and discontinuance of operating reports by the lessor company. In the present case it is understood that no such unification is at present contemplated. * * * Much coordination in the interest of more economical administration and operation is possible without the loss of the operating identity of the B. R & P.

In appraising the merit of this application but little weight can be given to the element of public interest involved in the proposed development of increased traffic between Buffalo and Baltimore via the B. R. & P. It is borne in mind that the route has long been in existence, apparently without the development of much traffic. It passes through Pittsburgh and is some 200 miles longer than that of the Pennsylvania. The operating characteristics of the latter are not shown of record, but it appears that there are a considerable number of heavy grades on the B. R. & P., principally against southbound traffic. The utility of the B. R. & P. as a route to points to the south and southwest, reached more directly by way of the applicant's system, is more apparent.

To secure the advantages in economy and efficiency here indicated as possible through the greater coordination of operations of joint facilities, and other benefits which will be promoted by more complete identity of interest, the application will be granted, but with the conditions that routes and channels of trade via existing gateways now employed for the movement of traffic of the B. R. & P. shall be kept open and efficiently maintained, so far as within applicant's power, unless otherwise authorized by us, and that, until our further order, the operations, accounts and statistics of the B. R. & P. shall be maintained in such manner as to preserve the continuity of records for purposes of comparison. The continued offer for 6 months to acquire the remaining outstanding shares of the B. R. & P. at the same price as agreed to be paid for the shares purchased from the Alleghany Corporation should be regarded as a further condition of our approval.

Since the submission of briefs but prior to oral argument in this proceeding, we issued our complete plan of consolidation, in which, among others, the lines of the B. R. & P., the Buffalo & Susquehanna, the Reading, and the Central of New Jersey are assigned to the Baltimore & Ohio system. At the oral argument question arose as to the relationship between this and other proceedings under section 5 (2) and proceedings under the provisions of paragraphs (4), (5) and (6) of the same section dealing with a complete plan of consolidation. The Delaware & Hudson was permitted to file a memorandum of its views, to which the applicant replied.

It is the position of the Delaware & Hudson that the vital factor of public interest under section 5 is the preservation of competition between carriers; that any action taken in this proceeding must be based upon evidence in the record pertaining thereto, and in the absence of stipulation we cannot take cognizance of matters arising after the record is closed; that we have no power to preserve a *status quo,* but on the contrary must make either a final order granting the application or an order dismissing the petition without prejudice; and that, after a plan of consolidation has been announced, the allocation of any particular line can be made only after a hearing which will afford opportunity for consideration of the relationship of that line to the plan as a whole. For example, the intervener urges that we are not in position to give weight to the proposed establishment of the applicant's new through line to New York City without proof that there is at least reasonable prospect that the applicant can and will acquire the Central of New Jersey, and that to do so would commit us in advance in a way contrary to the spirit of the act, unjust to the public and to actual and potential parties. Such evidence, it is contended, belongs to a hearing which takes the complete plan into account, along with other evidence. To these contentions the applicant rejoins that we may and should consider our complete plan in connection with

the pending application, and that we are not bound by the strict processes of judicial procedure. The applicant also expresses the view that applications for authority to acquire control under section 5 (2) which are not in conformity with our complete plan must be preceded by formal re-opening of the consolidation proceeding.

Approaching the question from opposite directions, both applicant and intervener thus conclude that section 5 (2) is in some degree superseded by our complete plan. It is unnecessary, in disposing of this case, to consider the status of an application under section 5 (2) for an acquisition of control which is not in conformity with the grouping of lines under our complete plan, or to pass upon the merits of all of the contentions raised by the intervener and the applicant. The application is in harmony with the plan and there is evidence in this record of sufficient probable public benefits to justify the control of the B. R. & P. by the Baltimore & Ohio, as proposed, regardless of the possible utility of a portion of the B. R. & P. as part of the proposed new route of the applicant. As to the matter of competition, it is sufficient to point out that the provisions of paragraph (8) of section 5, suspending in certain cases the application of the antitrust laws, are as applicable to proceedings under section 5 (2) as to those under the consolidation provisions of the section.

Railway is Owned by Orphans' Home

THE Sand Springs Railway Company, operating between Sand Springs, Okla., and Tulsa, is the only common carrier, engaged in interstate traffic, whose net income is devoted entirely to the maintenance of a philanthropic institution. The entire ownership of the railway is vested in the Sand Springs Home for orphans. This arrangement was made under the terms of the will of the late Charles Page, Oklahoma capitalist, who founded the Sand Springs Home in 1908, and endowed it entirely from his own resources.

The railway itself is unique in many other respects. The company was organized in January, 1911, by Mr. Page, and operates a main line of 10 miles, with 25 miles of industrial trackage. At the time it was built, Sand Springs was a village with a population of 20, while Tulsa's population was only 20,000. The population of the territory served by the line has increased by more than 500 per cent, and the industrial policy of the railway has been such as to permit it to share largely in this expansion.

The Industrial Policy

To create traffic for his road, Mr. Page adopted the policy of offering free sites and cheap fuel as inducements to factories to locate on his rails. The industries securing such privileges were required to operate their plants not less than 265 days during each year for a certain period of time. The purpose of this plan was to get away from promotional schemes, and to attract only permanent and bona fide enterprises. Through the operation of this policy, the railway company derived sufficient revenue to make it a financial success from the beginning and to provide funds for extensions from time to time, until, at present, a total of 35 miles of trackage is in service. Traffic is interchanged through direct connections with the Frisco, Santa Fe, Midland Valley and Oklahoma Union lines at Tulsa and with the Missouri-Kansas-Texas at Sand Springs.

No industry was too small or too large for consideration, and at present the line serves 36 manufacturing plants which produce annually many thousand carloads of various commodities, including cotton mill products, lamp chimneys and fruit jars, reinforcing steel and similar products, stoves and iron castings, coffee, derricks and oil well supplies, packing house products, ice, cheese and other dairy products, salt, brick and building tile, ornamental chandeliers, metal plating, building sand, pulp board boxes, spelter, straight-run and casinghead gasoline, blended lubricating oils, concrete pipe, paint, oil and gas tanks and separators and furniture. In addition to these factories, the railway also serves 40 jobbers, many of which are national in their scope of distribution. A most unusual feature of this service is that the Sand Springs line possesses the exclusive trackage for serving each of these various factories and warehouses.

The Orphans' Home That Owns a Railway

Operation

During Mr. Page's lifetime the Sand Springs Railway was operated as any other common carrier, and since his death the property has been expanded and operated for the benefit of the home by a board of directors, each member of which is the controlling head of another division of the Page estate. The railway organization is headed and under direct supervision of T. H. Steffens, president, who had been associated with Mr. Page for many years. Frequent daily freight and passenger service is maintained over the double track line between Tulsa and Sand Springs, and probably no cheaper passenger transportation is provided anywhere else, the maximum fare being only 10 cents, and 5 cents for half the distance or less either way. These fares were set to provide service at reasonable cost to employees of the industries and to stimulate the development of residence districts along his line. As a result, the territory between Tulsa and Sand Springs is now thickly dotted with the homes and gardens of a growing community.

The influence of the Sand Springs Home extends throughout the entire state of Oklahoma. It is provided with a modern four-story brick and concrete building, completely equipped with laundry, ice plant and refrigeration system, commodious kitchen and dining rooms, living rooms, library, dormitories and nursery, under the supervision of a competent superintendent and matron and an able corps of assistants, whose entire time is devoted to the physical, moral and spiritual training of the children to the end that they may develop into useful citizens.

Train Accidents in July, 1929

COLLISIONS and derailments of trains which were investigated by the Bureau of Safety of the Interstate Commerce Commission in the month of July, 1929, number 18; seven collisions and 11 derailments. Following are abstracts of the reports of the director of the Bureau of Safety on these accidents.

Collisions

Western Pacific, Nilegarden, Cal., July 1, 11:45 p. m.—Locomotive No. 81, without train, moving eastward at about 20 miles an hour, collided with a superior train, westbound freight No. 77, which train had come to a stop; and the engineman and fireman of No. 81, who jumped off, were injured. The eastbound engine had an order against No. 77 as far as Carbona, 11 miles west of Nilegarden, for No. 77, but the engineman forgot it, though he stopped some little time at Carbona station; and at that station he also received a copy of the order, the first copy having been in his hands over an hour. The engineman and the operator at Carbona had some conversation concerning the rights of No. 81 over the westbound freight, though their testimony is conflicting as to just what was said. The order delivered at Carbona was not read by the engineman to the operator nor did the engineman show it to the fireman. The operator said that when the engine started, he expected it to stop and back into the side track; and on finding that this stop was not made, he and the dispatcher tried to get into communication with other points in order to prevent the expected collision. The only explanation the engineman could offer was that he had expected to find the freight at Carbona, and after his conversation with the operator the other train appears to have dropped out of his mind.

Delaware & Hudson, Hudson Falls, N. Y., July 4.—A switching freight train, 26 cars, propelled by two locomotives, moving north at about 12 miles an hour, or perhaps faster, collided with a southbound passenger train, damaging both locomotives and one freight car; two employees injured. This collision occurred within yard limits—which limits extend from 1½ miles south of Fort Edward to a point 7 miles north of that place—and the responsibility is placed on the leading engineman of the freight who disregarded the yard limit rule. His explanation of his carelessness in running too fast was that he thought he knew the location of all the locomotives assigned to the 14-mile branch on which the collision occurred. There was, however, an automatic block signal in the caution position which was a warning to him that there was something on the main track ahead of him.

Terminal Railroad Association of St. Louis, St. Louis, Mo., July 5.—An eastbound passenger train of the St. Louis-San Francisco, backing into the station from the east was run past signal bridge No. 6, which displayed a stop indication and fouled the track on which a westbound passenger train of the Chicago, Burlington & Quincy was backing into the station from the west; and the Burlington train collided with the side of the other one while moving at a low speed. The rear car of the Frisco train was overturned and 36 passengers were injured. The conductor of the Frisco train is held responsible for the failure to obey the stop signal. This conductor claimed that he opened the brake valve properly but that the brakes did not hold; the inspector, however, believes that either the brake valve was improperly handled or that the conductor did not begin braking soon enough.

Chicago, Burlington & Quincy, Millington, Ill., July 6.—A northbound freight train which had been stopped for the purpose of taking on a car, was carelessly managed and the locomotive, which had been detached and was being backed into a side track, was run into by the cars of its own train, and the engineman was killed. The cars had been left standing on a descending grade without having hand-brakes set; and also under conditions which the inspector holds indicated careless management of the air brakes. The blame is placed on the rear brakeman, the conductor having been in the station office at the time.

Yazoo & Mississippi Valley, Webb, Miss., July 9, 12:40 p. m.—Northbound passenger train No. 324, moving at about 25 miles an hour, collided with southbound passenger train No. 323, moving at about the same speed, when the two trains met about one-half mile north of the station at Webb; one brakeman was killed, and 53 passengers, nine employees and three other persons injured. The northbound train had passed the station because a meeting order, requiring it to meet the other train at Webb, did not show that the northbound train (normally superior) must enter the side track; and the collision occurred on the main track between the switches of the siding. The inspector finds conflict of testimony as to whether the dispatcher, in transmitting the order by telephone, called for the repetition of the order from Swan Lake, south of Webb, before transmitting the clause about taking the side track. This clause appeared in the copy of the order delivered to the southbound train. The third-trick-operator at Swan Lake was in the office and confirmed the statement of Operator Bennett that the clause in question was not transmitted to him. The train order book was not conclusive, as this clause was underscored three times, while other parts were underscored twice. There is no explanation of this variation. But, says the report, though the responsibility for the original error cannot be placed on any one person, it does appear definitely that the rule requiring each operator to listen while other operators are repeating, was not observed by either operator, neither was the order sent to the meeting point, as it might have been. The report calls attention to the fact that wooden passenger cars were operated in these trains in connection "with cars of steel and cars having steel underframe, and it is believed that steps should be taken by all the rail carriers to eliminate the practice of operating wooden cars in this manner at the earliest practical date."

Chesapeake & Ohio, Harvey, W. Va., July 11, 10:55 p. m.—Westbound freight train, extra 1347, moving at low speed, ran into the side of a preceding westbound extra, because of a misplaced switch, and three employees were injured. A brakeman of the leading train maintained emphatically that he had set the switch straight, and had locked it, but the inspector does not believe the statement. The switch lamp was not lighted and the report criticizes the loose practice which is made evident by testimony that conductors and others have habitually neglected to report unlighted switches. It is held to be more than probable that had this switch lamp been burning, some one would have noticed the open switch in time to have averted the collision. "Immediate steps should be taken to see that main line switch lamps are given proper attention."

Central of New Jersey, Lanoka Harbor, N. J., July 13, 1:45 p. m.—A work train, extra 181, moving eastward at about 25 to 30 miles an hour, collided with a westbound freight, causing the death of the engineman (Miller) and one brakeman of the work train and the

injury of four work-train laborers. The freight engineman had seen the work train and had brought his own train to a stop. The work train was moving on the time of the freight without authority, having no right to move eastward without protection by flag. The engine was being run by Fireman Yates while Engineman Miller was eating his luncheon. The speed had been excessive and the flagman had given a motion to run more slowly; later the speed was again too high, indicating gross carelessness on the part of the engineman. Yates had never run with this engineman before, yet Miller seems to have put him in charge of the engine without much thought. The locomotive is one with two cabs and the engineman was not in the same cab with the fireman. The conductor is censured for not having stopped the train when it is evident that the locomotive was being carelessly managed. The engineman of the freight said that for six weeks prior to the date of the collision, the work train had been met, and had always been found properly protected, until this day.

Derailments

Chicago, Rock Island & Pacific, Metz, Iowa, July 2, 2:45 a. m.—Westbound passenger train No. 13, (ten cars) was derailed by a loose wheel, while moving at about 50 miles an hour, and 18 passengers were injured. The loose wheel was the front wheel on the left side of the rear truck of the second car (a refrigerator). The train ran about 3000 ft. after this truck ran off the track, and the engineman did not know what was the matter until after the train had stopped, although he had looked back and seen flying sparks and had started to set the brakes. Although the train stopped without shock to the locomotive, the fifth and sixth cars were overturned and all the others (back of the second car) were found leaning at various angles. All of the cars remained coupled together and were only slightly damaged. The loose wheel had moved outward on its axle about one inch and had turned on the axle about one-quarter revolution. Oil was found in the wheel fit, and a pressure of only ten tons was required to force the wheel off the axle.

Ann Arbor, Pomona, Mich., July 4, 1:35 a. m.—A westbound freight train moving at about 25 or 30 miles an hour, was derailed at a washout and the locomotive was overturned. The engineman and fireman were killed and one brakeman was injured. Because of a very heavy downpour of rain, a culvert 4 ft. square had proved insufficient to carry off the flood of waters, and a levee, which had been built to hold back any accumulation of water, was submerged. This washout is the second that has occurred at this point and the report says that steps should be taken to see that such damage does not occur again.

Atlantic Coast Line, Enfield, N. C., July 10.—Northbound passenger train No. 84, consisting of 14 cars, drawn by locomotive No. 1557, moving at good speed, was derailed at a point where track repairs were in progress and 41 passengers, five Pullman employees, one railroad employee and three other persons were injured. The forward part of the train remained on the track and the five sleeping cars at the rear were overturned. All of the persons injured were in these cars. The conclusion of the inspector is that the track was insecure. Officers of the road presented facts and arguments tending to show that it was safe for the movement of trains but the ballast had been taken out for about a quarter-mile and the ties had been left in this condition for several days, so that they were not adequately supported at their ends. A slow order ought to have been issued, but was not; and it is held that the roadmaster is in part responsible for this omission.

Erie, Corning, N. Y., July 11, 12:43 a. m.—A westbound freight train consisting of 128 cars and two cabooses, hauled by engine 3352, moving at about 35 to 40 miles an hour, was derailed by a broken wheel, and several of its cars fouled the eastbound track; and a part of this wreck caused the derailment of eastbound passenger train No. 6 which was moving at about 45 miles an hour. The wreck resulted in the death of two employees, two mail clerks and two trespassers, and the injury of 51 passengers, nine employees, three Pullman employees and two express messengers. This was a major disaster, five cars of gasoline in the freight having set fire to 24 others and the first four cars in the passenger train also being damaged by fire. The employees killed were the engineman and fireman of the passenger train. The freight was derailed by a broken rail and the engineer-physicist of the Interstate Commerce Commission, who examined the broken rail, says that the fracture could have been discovered prior to the derailment, though all of the railroad employees testifying said that it was not discoverable. The head of the rail was split for a length of about 10 ft. and the fracture, beginning near the top surface of the head had extended downward to the fillet of the web and had bifurcated so as to separate the head from the web. The surface of the fracture was worn and battered.

Chicago & North Western, Princeton, Wis., Monday, July 15, 6:40 a. m.—Eastbound train No. 6, moving at about 40 miles an hour, was derailed on a highway crossing, and the engine breaking through a bridge a short distance east of the crossing, was lodged on its side in the bed of a creek. The fireman was killed, nine passengers, three employees and one mail clerk were injured. The derailment was due to gravel which had filled up the flange-way at the crossing, there having been no trains over the railroad since 8:45 p. m. on the Saturday preceding. There was conflicting evidence as to the exact conditions at the crossing but the inspector concludes that, because of heavy automobile traffic on the highway, it was reasonable to assume that large quantities of gravel had been forced into this opening. The track foreman said that it had been necessary to clean out the flange-ways on this crossing four or five times a week.

Chicago, Milwaukee, St. Paul & Pacific, Tomah, Wis., July 15, 7:03 a. m.—Eastbound first-class train No. 12, second section, consisting of six loaded express cars and six dead-head cars, moving at a speed of between 25 and 40 miles an hour, ran through a No. 10 crossover and was derailed, the locomotive being overturned. The fireman and one brakeman were killed and six employees were injured. The crossover was one which had been installed temporarily for the purpose of diverting eastbound trains to the westbound track while rails were being renewed. The train approached this crossover on a curve, to the left, of one degree and the engineman appears to have left lookout duty largely to the fireman. There was a red flag at the switch, put there by the operator, but the engineman said that he did not see it. The order on which the train was running required it to get another order, at the crossover, before entering the westbound track; and there is a general rule limiting the speed of trains over a No. 10 crossover to 10 miles an hour. Engineman McMahon said that when the fireman told him that the switch was not turned and that the operator was holding up a train order hoop, he was led to believe that there had been some change in the orders and

that probably he was to continue on the eastbound track; and it was for this reason that he did not reduce his speed sufficiently to pass safely through the crossover. This line has automatic block signals and it is the custom to set the crossover switches, for movements like this, only after the approaching train has passed the last automatic block signal in the rear; as, if the switches were turned earlier that block signal would be caused to indicate stop, and thus delay the train. In this case, the operator had turned the switch at the outgoing end of the crossover and then had run to the other switch and turned it immediately in front of the approaching train. As soon as the outgoing switch had been turned, the automatic cab signal on the train had shown a red indication; and on this indication the runner immediately applied the brakes but the brakes had been applied and released only a short time before and full emergency effect was not obtained. The operator said that after turning the west switch he had just time enough to hold up the hoop, but that there was no one out to take the hoop. The inspector holds responsible both the engineman and the conductor. The engineman was not justified in assuming that he would not have to pass through the crossover, and the conductor was fully aware that the train was not being properly controlled. The automatic train stop and cab signal functioned properly. The engineman applied the brakes without waiting for the automatic apparatus to operate. The initiation of automatic control by the movement of the east switch took place when the train was only a very short distance from the crossover.

Pennsylvania, Hillside, Pa., July 15, 11:03 p. m.—An eastbound freight train with an engine at the rear as well as in front, moving on track No. 1, was derailed by the failure of a truck while traveling at 30 or 40 miles an hour, and eight cars, the 19th to the 26th, ran off the rails, and the 20th car fouled track No. 2, on which eastbound passenger train No. 60 was approaching at high speed. The passenger locomotive was derailed and overturned and its engineman was killed. The fireman was injured; no other injuries reported. Parts found on the track indicated that the freight car truck which failed had lost some of its parts about 6,900 ft. back of where the wrecked cars came to rest. The men on the freight acted promptly in their attempts to stop train No. 60, and the engineman of that train applied the brakes, reducing the speed from about 60 miles an hour to about 40 miles an hour before striking the wreck.

Lehigh Valley, Lattimer Junction, Pa., July 16.—An extra freight, moving in the yard at which are switched the cars of coal from Lattimer colliery, was derailed at a frog on a curve of 17 degrees; and a trainman, who either jumped or was thrown off the top of the caboose, was killed. The derailment was caused by poor track conditions. The roadbed was not firm enough, the elevation of the outside rail was not regular and the gage had not been sufficiently widened to compensate for the sharp curvature.

Denver & Rio Grande Western, Barranca, N. M., July 17.—Westbound passenger train No. 425, consisting of locomotive No. 174 and three cars, was derailed while moving at from 20 to 30 miles an hour on a curve of 23 deg. and the locomotive was overturned. This is a narrow gage line and the super-elevation of the outer rail on the curve was about three inches. The grade is descending at about 3 per cent. The engineman and fireman were killed and the conductor, the brakeman and an engineman who was riding on the train, were injured. The engineman of the train had failed properly to control its speed, though the engineman who was riding in the coach, who knew the runner, said that he was a careful man, competent for the duty of engineman on steep grades. It appears, however, that the runner had not made a trip over this part of the road for more than 15 years, and, because of this, the trainmaster had an extended talk with him before he went out on this trip; also, it was his first trip of any kind since November, 1928. However, it appears that this engineman, who was 61 years of age, had often had occasion to lie off for extended periods (in the winter) and spend his time on a ranch, and it did not appear that there was anything wrong with him physically. The inspector, however, questions seriously the judgment of the officer of the road who allowed the man to run this train without first giving him an opportunity to go over the line and make himself familiar with conditions.

Chicago, Rock Island & Pacific, Stratton, Colo., July 18, 3:55 a. m.—Westbound passenger train No. 5, 12 cars, drawn by two locomotives, was derailed at bridge No. 474.1 while moving at about 55 miles an hour, making a very bad wreck. Eight passengers and two porters were killed, and 80 passengers injured. The cause of derailment was the weakening of the track at the eastern end of the bridge by flood waters of Spring Creek. A highway bridge situated 170 ft. upstream is believed to have diverted the current of this stream and officers of the railroad held that this diversion was the cause of the damage to the railroad embankment, but investigations made by the Public Utilities Commission of Colorado are said to have led to the conclusion that the washout of the railroad embankment would have taken place had there been no highway bridge above it. The engineer-physicist of the Interstate Commerce Commission agrees with this conclusion. The channel of the creek was scoured out deeply under the railroad bridge. The report is supplemented by statements from the engineer-physicist, the officers of the railroad, the engineer of the Colorado Commission and others.

Mount Washington Railway, New Hampshire, July 20.—This report is a study of the cause of the derailment of the old locomotive known as "Peppersass," which accident was reported in the *Railway Age* of July 27. It appears that the mountain railroad on which this accident occurred, which is about three miles long, is built for almost its entire length on trestles, varying in height from 2 ft. to 20 ft. The maximum grade is 36 per cent, and at the point of accident it is 25 per cent. At the time the locomotive became uncontrollable it was moving at three miles an hour and before it tumbled off it ran on the trestle about 2000 ft. and attained a speed of about 35 miles an hour. A photographer, temporarily employed by the railroad company (the Boston & Maine) was killed and the engineman, the fireman and another photographer were injured. The inspector believes that the locking of the driving mechanism was the cause of the failure which led to the derailment. The persons riding on the engine heard a click or snap at the front end, immediately after which this end seemed to be lifted upward and it then fell down, apparently with the cog wheel out of mesh with the cog rail. One gear had a tooth broken off and this gear had been forced out of position. It is believed that the gears probably were jammed by the broken tooth of the pinion gear. The report says that this engine was in service from 1869 until 1878, and that since then it has been exhibited at numerous International expositions.

Looking Backward

Fifty Years Ago

The commerce committee of the House of Representatives on February 10 decided by a vote of eight to seven against reporting the Reagan bill for the regulation of interstate commerce, to Congress. During the course of the hearings it was stated that the bill was impractical, unjust, insincere and arbitrary.—*Railway Age,* February 12, 1880.

The Northwestern Grand Trunk [now part of the Grand Trunk Western] was completed on February 4 by the laying of the last rail a few miles from Valparaiso, Ind. When the line is opened for operation on February 16, it will provide the Grand Trunk [now part of the Canadian National] with a continuous line between Portland, Me., via Montreal, Toronto and Port Huron, and Chicago, 1,134 miles.—*Railway Age,* February 12, 1880.

Twenty-Five Years Ago

In Habersham county, Georgia, a superintendent of the Southern was fined $1,000 for the operation of a freight train on Sunday, and the Supreme Court of Georgia recently affirmed the judgment.—*Railroad Gazette,* February 17, 1905.

The earnings figures for railways in the United States show that during the year 1904 the carriers as a whole enjoyed continued prosperity. By geographical groups it appears that the southwestern lines increased their earnings about $9,000,000 over 1903, and the southern roads about twice that amount, while the eastern roads' earnings decreased and those of the Northwest showed practically no change from the previous year.—*Railway Age,* February 17, 1905.

The railroad commission bill imposed upon the consideration of the Wisconsin Legislature on February 10 by Governor La Follette, in pursuance of his avowed purpose to reduce the revenues of the railways and at the same time to largely increase their taxation, is justly described as one of the most sweeping and stringent measures ever introduced in any legislature. In effect the bill places in the hands of a commission of three men all the duties performed by the traffic managers of the various railways in Wisconsin.—*Railway Age,* February 17, 1905.

Ten Years Ago

The net operating income of the Class I railroads in 1919 was about $515,000,000, which represents a return of only 2¼ per cent on their estimated investment of $19,000,000. This is just half of the 5½ per cent prescribed as the standard in the Esch-Cummins bill as agreed upon by the conference committee and represents about 57 per cent of the standard return guaranteed to the railroads during federal control.—*Railway Age,* February 13, 1920.

Director General Hines on February 5 announced that as T. C. Powell had resigned as director of the Division of Capital Expenditures of the Railroad Administration, because of his election as vice-president of the Erie, the Division of Capital Expenditures would be discontinued. The Division of Liquidation Claims has been created to provide for the settlement of questions arising out of federal control.—*Railway Age,* February 13, 1920.

Wage demands presented by the 14 principal organizations of railway employees, which it has been estimated would add from $800,000,000 to $1,000,000,000 to the payroll of the railroads if granted, were definitely refused by the Director General on February 11, but at the request of the organizations his report on the matter and their arguments were referred to the President with his recommendations for a final decision.—*Railway Age,* February 13, 1920.

New Books

Books and Articles of Special Interest to Railroaders

(Compiled by Elizabeth Cullen, Reference Librarian, Bureau of Railway Economics, Washington, D. C.)

Books and Pamphlets

The Great Lakes Grain Movement—Buffalo and the St. Lawrence Shipway, by Robert W. Elmes. "This analysis in tabloid form, covers the purely economic phases of the Great Lakes grain flow. There is no attempt to present or to discuss the engineering features in the proposals for the St. Lawrence project." p. 4. 26 p. Map. Pub. by Buffalo Chamber of Commerce, Buffalo, N. Y. *Apply.*

Railway and Seaport Freight Movement With Examples of British and American Practice, by George Bulkeley. The author is Port Manager, Kenya and Uganda Railways and Harbours, Mombasa, Kenya, Africa. The foreword by Sir Ernest Grigg, High Commissioner of Transport for Kenya and Uganda, points out "Kenya was never conquered by arms. It was won by the railway." The author begins his chapter on the applied science of freight movement with "If any man seeks a life full of variety and interest, let him ally himself to the railway and ocean * * * the word *movement* is the keynote of a transport man's life. He must think and act in energetic terms of it all his days, and, since transport is a twenty-four hour 365 days a year operation, must put in on occasion much of what persons engaged in daytime occupations call their sleeping hours." p. 3. Types of freight motive-power and equipment, the control of movement under varieties of conditions, freight between ship and shore, statistics, and "getting things done" are discussed. Illustrations, charts, graphs. 22 p. Pub. by Crosby Lockwood and Son, London, England. 28 shillings.

A Survey of the Uses of Copper and Its Alloys in the Electrification of Steam Railroads, by Copper and Brass Research Association. Takes up general history of railroad electrification, electrification systems, present electrifications, future electrification prospects, with detailed analyses of present electrifications and descriptions of electrical equipment. 119 p. Pub. by Copper & Brass Research Association, New York City. *Apply.*

A United New England—Four Years of Progress 1926-1929. An illustrated summary of New England's public relations, community development, power, railroads, industries, water transportation, agriculture, recreational development, and so on. 48 p. Pub. by New England Council, Boston, Mass. *Apply.*

Periodical Articles

Control of Investment versus Control of Return in the Regulation of Natural Monopolies, by Bruce W. Knight. "The main thesis of the present discussion will be that regulatory bodies, in attempting to control charges in such a way as to establish the competitive rate of return on the competitive value of public utility property, begin at the wrong end of the problem of controlling monopoly." p. 263. Quarterly Journal of Economics, February, 1930, p. 263-285.

Development of De Luxe Passenger Service in Europe, by Louis Hall. Expansion of the International Sleeping Car Company's activities, cost of the new equipment (approximately $40,000 per car), introduction of the club car on the Côte d'Azur Pullman Express, and other extensions and innovations. Commerce Reports, February 10, 1930, p. 407-408.

Trend of the Southern Iron Industry Under the Plantation System, by Lester J. Cappon. "It is noteworthy that southern railroads which, before the Civil War, were constructed with the primary purpose of facilitating the marketing of the piedmont cotton crop and obtaining a food supply from the Upper South, incidentally stimulated the iron industry...." p. 364. Journal of Economic and Business History, February, 1930, p. 353-381.

Odds and Ends of Railroading

Agents-Councilmen

The recent elections made councilmen of two agents of the Fort Wayne division of the Pennsylvania in their respective cities. The new dignitaries are C. N. Shultz, freight agent at Mansfield, and A. I. Cullen, station agent at Crestline, Ohio.

Fastest Railroader

The Illinois Central has a sprinting marvel in the person of Emmett Toppino, clerk at New Orleans, La. Toppino recently did what only four other humans have been able to do, by running 100 yd. in 9.6 sec. This feat broke the Southern Amateur Athletic Union record of 9.8 sec., which had stood for more than 30 years.

Good Advertising

The Atlantic National Bank, of Jacksonville, Fla., is conducting a unique advertising campaign in Florida. Whenever a new railway station is built anywhere in the State, the bank runs a large advertisement, giving a picture of the station, a map showing its location, and lauding the railway that built it. The latest ad deals with a station at Williston, Fla., built by the Seaboard Air Line.

Engineer of California's First Fruit Train Is Dead

Matthew L. Rudech, the man who pulled the throttle of the locomotive that hauled the first special fruit train out of California, died in Sacramento recently at the age of 75. After several years in railroad service, he retired to engage in the grocery business in Sacramento. The special fruit train left Sacramento on June 24, 1886. The train of 16 cars was chartered by W. R. Strong & Co., and Edwin T. Earl. Rudech was engineer on locomotive No. 18 and A. K. Prather, retired some time ago as engineer on the Los Angeles division of the Southern Pacific was the fireman on Rudech's engine.

Troubles of a Wrecking Crew

A railroad wrecking crew must necessarily be prepared to cope with almost unlimited and totally unforeseen emergencies, but in all the long list of possibilities a swarm of bees is not ordinarily included. However, when a freight car on the Yugoslavian State Railways was derailed near Karlovac, not long ago, with resulting damage to several of the pots of honey with which it was loaded, a determined swarm of bees from a nearby apiary was first on the scene. When a wrecking gang reached the spot to clear the line, the territory within a hundred yards of the car was quite untenable. After a few tentative trials of strength, the wreckers fled incontinently, to make the best of the situation until evening, when the huge brown mass slowly resolved itself into its tiny constituents and staggered home, almost too full to buzz.

One Way of Paying Enginemen

An interesting sidelight on methods of railway management in vogue in Great Britain 75 to 100 years ago is provided by an item in the Railway Gazette (London), which reads:

"It may not be generally known that it was at one time the custom for engine drivers to enter into formal agreements with the companies to work trains at a certain sum per mile. The custom seems to have arisen in the earliest days of railways, as, in 1830, the drivers of the Stockton & Darlington Railway were paid ¼d. (one-half cent) per ton-mile, out of which they had to find coal and oil, and pay themselves, and probably their fireman as well. The company, however, maintained the engines in general repair. On some parts of the Eastern Counties Railway, trains were worked by contract, and it is on record that a driver stationed at Peterborough had his price for working goods trains advanced, in December, 1854, from 5¼d. (10½ cents) per mile to 5½d. A few years later, a driver working the passenger traffic between London, Enfield and Hertford was paid 3⅞d. per train-mile. The driver had to sign an agreement in the presence of a witness. He had to pay his fireman and cleaner, provide firewood for lighting up, coal or coke for running, tallow and suchlike necessities. He had also, out of the same money, to repair and pay for the cost of certain repairs, giving all necessary assistance himself on shed days. He had not, however, to provide articles of iron, brass, copper or steel, or pay for labor when the engine went into shops for general repairs or repairs due to accidents beyond his control. For an assisting engine he had to pay 3d. per mile. If required to pilot or assist another engine, he received 2d. for every mile out and home. The drivers bought their fuel and stores from the company."

New York Society of Model Engineers

In 1925 four gentlemen, still interested in the mechanical toys of their youth, got together to play with miniature railroad locomotives they had made. They founded a society which, to justify their taking so much time off from business and family life, they gave a highly dignified title: The New York Society of Model Engineers. The group has grown to about 90 now, and includes men who make other things than railroad engines, and avows a lot of serious purposes, such as "demonstrating the difference between so-called 'commercial models' and actual scale-built models." This fools the gentlemen's wives into thinking the whole thing is pretty important. What it really comes down to, though, is playing with choo-choo trains and such.

The society holds meetings once a month in a back room in the Engineers' Club, where they take up the rugs, move the chairs aside, and show off their models. The locomotive builders lay down tracks and demonstrate the prowess of their respective creations. Most of the engines are coal-fired, and steam along like big ones, throwing off sparks. These are considered much superior to electric locomotives. One member put in 3,000 hours making an electric locomotive, and the coal-and-steam men just turned up their noses at it. Conservative members believe in still-life models and stress the importance of making exact replicas in miniature of big engines, but the radical element likes models that have works in them and will throw off sparks. The society also holds an annual exhibition. This year's was held in a room in Broadway and, as usual, the engines were most conspicuous. Tracks ran all about the room and the members cheered and shouted over their locomotives and trains.

Some startling, interesting models were displayed at the show. One locomotive, built to scale, and about the size of a fat dachshund, had about everything a big locomotive has, and bore a sign saying it had pulled eight people.

Vincent Astor, who is a member of the society, had one of the largest and best models, but it didn't make the show, because workmen dropped it in loading it for shipment. Mr. Astor's locomotive is 18 in. high. He has a track for it on his estate on Long Island, and makes it pull things and people. Once he made it tow a Ford. Another time he rode on top of it, in a cramped position, towing cars bearing a load of 1000 lb. This time he was out for an endurance record. Fuel and water were handed to him in buckets and pitchers as he rode around the tracks. The engine could have gone on indefinitely, apparently, but he had to give up after 45 min., because his knees got tired.

Other prominent members of the society are H. O. Havemeyer, Jr., who has a B. & O. mountain-type locomotive, and Joseph T. Lozier (locomotives, freight cars, ships, etc.). Most model builders are business-men. There is only one real engineer in the lot.—The New Yorker.

NEWS *of the* WEEK

Detroit Union Produce Terminal, Wayne County, Michigan, Pennsylvania Railroad

THE PROTECTIVE SECTION of the American Railway Association will hold its tenth annual meeting at the Hotel Statler, Buffalo, N. Y., on June 17, 18 and 19.

THE WESTERN RAILWAY CLUB will hold its next meeting at Hotel Sherman, Chicago, on February 17. The speaker will be W. E. Dunham, superintendent of the car department of the Chicago & North Western.

THE FOLLOWING OFFICERS of the Baltimore & Ohio Railroad Accounting Association have been re-elected for the year 1930: William R. Heartt, president; E. Frank Thomas, vice-president; Ethelbert Hall, secretary; Joseph T. Maloney, treasurer.

CLARENCE E. SMITH, a conductor on the St. Lawrence division of the New York Central, has been presented by the railroad company with a valor medal in recognition of his action, at the risk of his own life, in saving the life of a child of four years, Forrest Roy, at Massena, N. Y., on June 15, last. The boy had dashed in front of an approaching locomotive.

THE RAILWAY CLUB OF PITTSBURGH (Pa.) will hold its next meeting on Thursday evening, February 27, at the Fort Pitt Hotel, Pittsburgh. The speaker will be G. K. Roper, senior secretary, Transportation Department, National Council of the Young Men's Christian Association, and his topic will be "Human Values in the Transportation Industry." Music will be furnished by the colored quartette of the Pullman Company from Chicago.

The Interstate Commerce Commission, on a complaint filed by the train service brotherhoods, has issued a report and an order modifying its safety appliance order of 1911 to permit for test purposes the use of box or other house cars equipped with running boards made of material other than wood. The commission finds that a general modification of the order is not justified by the record but the record will be held open to afford the parties an opportunity to submit evidence as to the results of the tests.

Wage Statistics for November

The number of employees reported by Class I railways to the Interstate Commerce Commission as of the middle of November, 1929, was 1,681,027, and the total compensation was $240,797,028. Compared with returns for the corresponding month of 1928 the summary for November, 1929, shows an increase in the total number of employees of 568, or .03 per cent. The total compensation shows an increase of $2,579,935, or 1.08 per cent.

New York Railroad Club February Meeting

The next meeting of the New York Railroad Club, to be held February 21, has been designated "Electrical Night." The meeting will be held, as usual, in the main auditorium of the United Engineering Society, 29 West Thirty-ninth street, New York.

The speakers will be F. H. Shepard, director of heavy traction, and S. M. Kintner, manager, research department, Westinghouse Electric & Manufacturing Company. The former will discuss "Electrification in Prospect," and the latter "By-Products of Radio." Mr. Kintner will be assisted by Dr. P. Thomas, research engineer, Westinghouse Electric & Manufacturing Company.

Boy Scouts as Railroaders

The Chicago, Milwaukee, St. Paul & Pacific, working in conjunction with local organizations of the Boy Scouts of America, has organized 70 troops, in the past few years, through a special department established for this purpose. The railroad's interest in scout work is not altruistic, but is a far-sighted business policy whereby the road can recruit better employees. The Milwaukee has more than 50,000 employees in some 1,500 communities and must draw on the youth of the country to maintain its personnel. Lads who have been trained as Boy Scouts make courteous and dependable employees. In addition they are trained to avoid accidents to themselves and to others. Scout troops are enlisted to aid the railroad in discouraging children from playing in and about railroad yards and in carrying out other safety measures.

Railway Employment in December

The Interstate Commerce Commission's preliminary statement of the number of railway employees as of the middle of the month of December, 1929, shows a total of 1,605,083, a decrease of only 1.04 per cent as compared with the number in December, 1928. This was, however, a decrease of 3.33 per cent as compared with December, 1927. The report for December shows an increase of .28 per cent in the maintenance of way and structures group and decreases of 1.99 per cent in maintenance of equipment and stores, 1.76 per cent in transportation (other than train, engine and yard), 1.37 per cent in yardmasters, switchtenders and hostlers, and 1.65 per cent in train and engine service. There were slight increases in the groups of executives, officials, and staff assistants, professional, clerical and general.

Development of Modern Signaling

"Development of Modern Signaling" is the title of the leading article in the Mutual Magazine of the Pennsylvania for February. The article is an historical sketch, by A. H. Rudd, chief signal engineer of the Pennsylvania, telling of the growth of signaling and interlocking devices on that road. A chief feature of the article will be found to be the dozen or more pictures, apparently from original drawings, showing early types of signals. One of these is a balloon train order signal of the Belvidere-Delaware, in use more than 60 years ago. The early block signals on the Pennsylvania, when a red flag in a box was dropped before a light to give the night stop indication, are shown. Other pictures show the first upper-quadrant semaphores at Parkesburg, Pa., (1906) and the signals at Broad street terminal in 1888. The latest stage of progress is shown in a view of the Pennsylvania line in New Jersey, where there are six main tracks which, with a seventh, are spanned by a single signal bridge. The signals are of the latest position-light type and the scene is char-

acterized by a total absence of telegraph poles, the communication wires having been placed underground.

Mr. Rudd says that of 50 important developments in signaling, the Pennsylvania is to be credited with being the pioneer in about 30; and his article consists mainly of notes on these 30 developments. He gives credit to the originators in most cases, where practicable. In this list we find the names of Dr. William Robinson and Frank L. Pope; Prall & Burr (power interlocking at Mantua, Philadelphia, 1876); A. S. Vogt and Joseph Wood (first automatic train stop); Gassett & Fisher; C. Herschel Koyl and John D. Taylor. Then, coming to names not so ancient, we find C. C. Anthony, W. P. Allen, W. H. Elliott, W. L. Smith and E. M. Weaver; Garber & Post (switch and lock movement) and C. C. Thorn (switch movement, 1928).

Coming now to Mr. Rudd's own inventions and developments, individual names are not given and he refers to "the signal engineer" and the Corning Glass Works. The position light signal was mainly the work of Messrs. Rudd and Churchill, the latter a scientist of the Corning Works.

The cab signal, as is well known, is the latest major development in this field on the Pennsylvania and for this Mr. Rudd himself is chiefly responsible.

Pullman Employees' Safety

The annual safety contest carried out by the Pullman Company (the carrier, not the manufacturing corporation) shows a decrease of nine per cent in casualties to employees per million man-hours in 1929, the casualty rate per million man-hours being 7.15 in 1929 as compared with 7.83 in 1928. The man-hours worked, by all employees, in 1929 was 77,476,799 in contrast to 75,957,540 in 1928, while the number of reportable ("three-day") accidents was 554 in 1929 and 595 in 1928.

The laundry employees were the only group to show an increase in casualties, the number being 4 in 1929 and none in 1928. All others showed decreases that ranged from 2 per cent to 47 per cent. The district office employees, who worked 6,231,651 man-hours, had no accidents in either year; the conductors with 7,934,642 man-hours experienced 13 casualties in 1929 and 24 in 1928; the shop employees with 16,599,068 man-hours had 124 in 1929 and 228 in 1928; and the porters and maids with 34,747,164 man-hours had 273 in 1929 and 321 in 1928.

Thornton Hopeful for C. N. R. Refinancing

Commenting on the plan for the refinancing of the Canadian National, Sir Henry Thornton, president of the company in Toronto last week said "much depends on what the government decides to do. We have practically completed our plans for ratification, and I expect they will get every consideration when submitted.

"My trip to England cleaned up a lot of loose ends, and most satisfactorily too," continued Sir Henry. "There were a number of minor points to be attended to over there before we could round out our scheme. The central purpose of the refinancing plan was to capitalize the great improvement in net earnings of the company during the last seven years, and to provide for the company a sound financial structure.

"To a large extent," he said, "it involves writing off uncapitalizable items which prevent the company from making a good showing each year despite our excellent earnings."

"'Getting rid of unwelcome inheritances,'" he was asked.

"Yes, that is one way of putting it," he said. "I might say unwelcome and stupid inheritances."

"Another difficulty is that we are not an amalgamated company. We consist of a large number of companies pooled under a central administration, under a central system of operations. We want to make them a corporate entity, welded together financially, from a standpoint of capitalization, and in every other way."

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The Wayside Signal in the Cab
From a Pennsylvania Railroad Advertisement

Traffic

The Interstate Commerce Commission has postponed to May 20 the effective date of its order of June 3, 1929, in Part 6 of No. 17,000, prescribing a revision of rates on iron and steel articles in Official Classification territory, except so far as it applies to rates on annealing pots.

Examiner A. J. Sullivan of the Interstate Commerce Commission has submitted a proposed report recommending that the Commission find that the division accorded the Middle Creek out of the joint rates on bituminous coal from mines on its lines in West Virginia to interstate destinations should be increased from 15 to 25 cents. The Middle Creek had asked for 40 cents, the present local rate from the mines on its line to Hartland, Va., the junction point with the Baltimore & Ohio.

National Freight Company

Victor Stern has been appointed assistant to vice-president in charge of merchandise consolidation of the National Freight Company, Chicago. T. R. Sorensen has been appointed assistant to vice-president in charge of Pacific Coast consolidation and H. D. Howell has been appointed assistant to vice-president in charge of export.

Through Train, Richmond and Detroit

The Chesapeake & Ohio announces that beginning March 30, a new through train will be run between Richmond, Va., Newport News and Norfolk on the east and Columbus, Toledo, Detroit and Cleveland on the west. The new train will run over the Chesapeake & Hocking which connects the Chesapeake & Ohio with Columbus, Ohio. The route to Detroit will be over the Pere Marquette, and through service to Cleveland will be made by a connection with the New York, Chicago & St. Louis. The train will have all the luxuries of modern travel but there will be no extra fare. Westbound it will leave Norfolk and Old Point Comfort at 9 a.m. and Richmond at 12:01; arrive at Columbus 3:15 a.m., Toledo 6:30, Detroit 8:20 and Cleveland 8:35. Eastbound, leave Cleveland 6:10 p.m., Detroit 6:15 p.m., Toledo 8 p.m. and Columbus 11:10 p.m. Due at Richmond 2:15 p.m. and at Norfolk and Old Point Comfort at 5 p.m.

New Jersey Stations Discontinued

The Public Utility Commissioners of New Jersey, acting on the application of the West Jersey & Seashore, have authorized the abandonment of non-agency stations, because of shrinkage in business, at Bellhurst, Doughty, Amatol Junction, Weymouth, Germania, Leaming, Ludlam Street, Acton, Riddleton, Bricksboro, Clayville, Point Airy and Menhaden. Relative to Penton and Beach Creek,

also the subject of petitions, it is held that they should be continued, to determine whether or not the request of the road is reasonable.

Authority is given to discontinue maintaining an agent at Manumuskin. Freight shipments will be managed by the agent at Millville.

Reega, a non-agency station, will hereafter be maintained for passenger service only. The maintenance of freight facilities may be discontinued and the side track may be taken up.

The petition for leave to discontinue the agent at Richland is denied as is also the petition to abandon the non-agency station at South Woodstown.

Agricultural Department of the Long Island

The demonstration farm of the Long Island Railroad, which has been a prominent feature in the operation of that railroad since 1907, has been disposed of, and passes to private ownership. This piece of land, at Medford, N. Y., was bought under the administration of the late Ralph Peters, president of the Long Island, who, throughout his administration, sought to promote the property of the Long Island Railroad by encouraging the agriculture of the island. For 20 years, diversity of crops was one of his hobbies, and, in 1925, a thousand varieties of trees, shrubs, vines and vegetables were produced on the railroad company's property. Of some kinds of market garden produce, the market was immensely widened by the enterprise of the railroad company.

The announcement of the abandonment of farming says that the State School of Applied Agriculture, at Farmingdale, the Long Island Vegetable Research farm, and other institutions, will take the place of what the railroad has been doing.

The agricultural department of the road is still maintained and is in charge of Mrs. H. B. Fullerton, director of agriculture.

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On the New Haven at East Lyme, Conn.

Foreign Railways

German Railway Reparations Under Young Plan

Report No. 10 of Gaston Leverve, commissioner for the German railways to the Reparations Commission, recently issued in Berlin, reviews the payments which have been made by the German Railway Company to the Agent General for Reparations during the five years in which the Dawes Plan has been effective and sets forth changes contemplated in the status of these payments under the Young Plan.

The fifth year of the application of the Dawes Plan terminated on August 31, 1929, and the changes contemplated in the pending Young Plan were made retroactive to September 1, 1929. So long as the latter is not finally adopted, however, the payment of annuities based on the Dawes Plan is continuing.

The commissioner prefaces his discussion of reparations with a survey of recent financial and operating results of the German railways. While the 1929 figures are yet incomplete, those of the latter part of this past year are estimated, and on this basis, the review points out that 1929 gross revenues should be approximately 5,370,000,000 reichsmarks ($1,278,000,000), an increase of 211,000,000 reichsmarks ($50,218,000) or four per cent as compared with the 1928 figure. Operating expenses for 1929 are estimated at 4,459,000,000 reichsmarks ($1,061,000,000), thus leaving an estimated net of about 911,000,000 reichsmarks ($217,000,000), an amount sufficient to cover reparations charges, the dividend payment on the preferred shares, an expenditure of 79,900,000 reichsmarks on additions and betterments and an allocation of 91,800,000 reichsmarks to the legal reserve. This latter will then total 500,000,000 reichsmarks as stipulated in the statutes.

Attention is next called to the fact that during the past year the company has had considerable difficulty in obtaining loans for necessary capital expenditures. It was unable to procure any kind of loan save a credit of 100,000,000 reichsmarks ($23,800,000), for three years, granted by rolling stock manufacturers, and a similar credit for 10,000,000 reichsmarks from bridge builders. "For 1930" the report continues, "the capital market so far appears to offer no more favorable prospects to the company, which will no doubt be obliged once again to cover extensions out of operating receipts."

From the inauguration of the Dawes Plan in 1924, until August 31, 1929, the total of the annuities levied on the German Railway Company has been 3,785,000,000 gold marks ($900,830,000). Actually, the greater part of the expenditure on outlay has been slightly less than this total by reason of the slight difference in the value of the gold marks on which the levy was based and the reichsmarks in which payments were made, and also because of an agreement whereby payments were made monthly instead of semi-annually as contemplated in the Dawes Plan. Because of these monthly payments in anticipation of the semi-annual due dates, certain discounts were allowed. For example, the levy contemplates a monthly payment of 55,000,000 gold marks on the reparations bonds whereas recent actual payments have fluctuated between 53,000,000 and 54,000,000 reichsmarks. This payment on the reparations bonds account does not include the levy based on the transport tax. Proceeds of this latter are delivered by the company to the German Finance Minister who in turn makes a monthly payment from them of about 24,000,000 reichsmarks to the Agent General. Thus the total reparations levy on the railways to date—the 3,785,000,000 gold marks mentioned in the foregoing—includes the transport tax which, though paid indirectly, is nevertheless an assessment on railway revenues. As an illustration, the total amount of the annuity paid by Germany for the year ending August 31, 1929 was 2,500,000,000 gold marks. Of this, 660,000,000 was derived from payments on railway bonds and 290,000,000 from the proceeds of the transport tax—a total of 950,000,000 gold marks levied on the railways. This total railway assessment was the same in 1927-28 whereas it was 840,000,000 gold marks in 1926-27, 845,000,000 in 1925-26 and 200,000,000 in the first year of the Dawes Plan 1924-25.

The Young Plan in no way reduces this annual financial burden of the railways. While it provides that the proceeds of the transport tax shall no longer be devoted to reparations, these assessments will nevertheless have to be paid by the railways to the Reich. The latter will therefore be the beneficiary through its retention of these payments. It is pointed out, however, that this situation may afford relief to the extent that the German government "is willing either to repay a part of the tax to the railways, or to reduce the amount while authorizing a corresponding increase in rates."

The reparation payments made directly by the railways under the Young Plan will differ only to the extent that their basis will be altered. The annual levy will be based on 660,000,000 gold marks, but the reparations bonds will be abolished and a direct tax on railway revenues substituted for them. A later modification of the Young Plan provided for a slightly rising scale in these assessments.

Further changes in the railway status contemplated by the Young Plan may be summarized as follows: Abolition of foreign participation in the administration of the railways; maintenance of the private and independent character of the company; and strengthening of the German government's regulatory power as a consequence of the abolition of foreign control.

Equipment and Supplies

Locomotives

THE NORTHERN ALBERTA is inquiring for two locomotives of the 2-10-0 type.

THE MICHIGAN LIME, STONE & CHEMICAL COMPANY is inquiring for two six-wheel switching locomotives.

Freight Cars

CANADIAN PACIFIC.—See Passenger Car item.

THE CHICAGO, ROCK ISLAND & PACIFIC has ordered 50 caboose cars from its own shops.

THE YOUNGSTOWN SHEET & TUBE COMPANY is inquiring for 80 gondola car bodies.

THE INLAND LIME & STONE COMPANY is inquiring for from 25 to 30 gondola cars of 50 tons' capacity.

THE UNION CARBIDE COMPANY is inquiring for four steel flat bottom gondola cars of 50 tons' capacity.

THE GENERAL CHEMICAL COMPANY ordered 15 tank cars of 70 tons' capacity from the American Car & Foundry Company.

THE ROCK ISLAND REFINING COMPANY is inquiring for 150 tank cars of 8,000 gallon capacity and 50 tank cars of 10,000 gallon capacity.

THE CALUMET & HECLA CONSOLIDATED COPPER COMPANY has ordered four 20-yard air dump cars from the Koppel Industrial Car & Equipment Company.

THE WAGNER QUARRIES COMPANY has ordered two 30-yard air dump cars from the Koppel Industrial Car & Equipment Company.

THE ANGLO-CHILEAN CONSOLIDATED NITRATE CORPORATION has ordered 20 box cars of 25 tons' capacity from the Magor Car Corporation.

THE PERE MARQUETTE has ordered 25 caboose cars from the Magor Car Corporation. Inquiry for this equipment was reported in the *Railway Age* of January 4.

THE INTERNATIONAL RAILWAYS OF CENTRAL AMERICA have ordered 35 steel-frame stock cars of 25 tons' capacity from the Gregg Company. Inquiry for this equipment was reported in the *Railway Age* of February 1.

THE LOUISVILLE & NASHVILLE has ordered 500 gondola cars, 300 hopper cars, and 250 flat cars, all of 50 tons' capacity, from the Pressed Steel Car Company, 500 box cars of 50 tons' capacity from the Mount Vernon Car Manufacturing Company and 250 gondola cars of 70 tons' capacity from the Pullman Car & Manufacturing Corporation. Inquiry for this equipment was reported in the *Railway Age* of January 25.

Passenger Cars

THE GREAT NORTHERN has ordered one 75-ft. baggage and mail gas-electric rail motor car from the J. G. Brill Company.

THE SOUTHERN PACIFIC is inquiring for seven all-steel electric motor cars 58 ft. long and two all-steel electric trailer cars 58 ft. long.

THE BANGOR & AROOSTOOK has ordered 12 steel underframes for passenger cars from the Osgood Bradley Car Company. Inquiry for this equipment was reported in the *Railway Age* of January 18.

THE READING is now inquiring for the electrical equipment on 61 passenger motor cars, seven passenger and baggage motor cars and two passenger, baggage and mail motor cars. These are part of the 100 multiple unit suburban cars reported in the *Railway Age* of December 7. They are to use alternating current of 11,000 volts and 25 cycles.

THE CANADIAN PACIFIC will buy new equipment during 1930 to include the following:

10	baggage and express cars
3	mail and express cars
7	smoking coaches
13	first-class coaches
8	dining cars
50	sleeping cars
5	compartment cars
14	parlor cars
2	single room overnight sleepers
2	gas-electric rail motor cars
250	coal cars
200	freight refrigerator cars
50	ore cars

Contracts for this equipment are expected to be let in the near future.

Iron and Steel

THE SEABOARD AIR LINE has ordered 3,000 tons of 100-lb. rail from the Tennessee Coal, Iron & Railroad Company.

THE SOUTHERN PACIFIC is inquiring for 300 tons of structural steel for an addition to its hospital at San Francisco, Cal.

THE PERE MARQUETTE has ordered 1,400 tons of structural steel for a bridge at Detroit, Mich., from the American Bridge Company.

THE CLEVELAND, CINCINNATI, CHICAGO & ST. LOUIS is inquiring for 400 tons of structural steel for a bridge near St. Louis, Mo.

THE CLEVELAND, CINCINNATI, CHICAGO & ST. LOUIS has ordered 420 tons of structural steel for a bridge at Indianapolis, Ind., from the American Bridge Company.

THE SOUTH MANCHURIAN RAILWAY has ordered through Mitsui & Company, New York, 150 tons of manganese steel rail of 100 lb. sections from the Manganese Steel Rail Company.

Machinery and Tools

THE CHICAGO, ROCK ISLAND & PACIFIC is inquiring for the following machine tools:

1 tool-room lathe
1 42-in. carwheel lathe
1 No. 4 vertical miller
1 cutter grinder
1 5-ft. radial drill
1 36-in. crank shaper
1 horizontal boring and drilling machine
1 48-in. carwheel borer

Signaling

THE CHESAPEAKE & OHIO has ordered from the Union Switch & Signal Company an electro-mechanical interlocking, nine mechanical levers and four electric, for US Cabin, Steele, Va.

THE NEW YORK, NEW HAVEN & HARTFORD has ordered from the Union Switch & Signal Company, a mechanical interlocking for Tower 75, New Haven, Conn.; style A machine, 80 levers.

Miscellaneous

THE LOCOMOTIVE FIREBOX COMPANY, Chicago, received during January orders for locomotive syphons for the following railroads:

St. Louis-San Francisco	46	syphons	applied	to	23	locomotives
Canadian National	38	"	"	"	19	"
Montour	2	"	"	"	1	"
Western Pacific	10	"	"	"	4	"
Bessemer & Lake Erie	37	"	"	"	13	"
Elgin, Joliet & Eastern	2	"	"	"	1	"
New York, New Haven & Hartford	3	"	"	"	1	"
Denver & Salt Lake	2	"	"	"	1	"
Missouri Pacific	70	"	"	"	35	"
Boston & Maine	90	"	"	"	45	"
Chicago Great Western	44	"	"	"	15	"
Atchison, Topeka & Santa Fe	36	"	"	"	12	"
Chicago, Rock Island & Pacific	10	"	"	"	5	"
Denver & Rio Grande Western	20	"	"	"	10	"
Reading	12	"	"	"	4	"
Central of Georgia	2	"	"	"	1	"
Lehigh Valley	20	"	"	"	5	"
Wabash	50	"	"	"	25	"
Grand Trunk Western	30	"	"	"	15	"
Chicago & Eastern Illinois	28	"	"	"	14	"
	554				249	

Supply Trade

Clyde V. Root has been appointed representative of the **Pyle National Company,** Chicago, in charge of railroad and industrial floodlighting.

M. D. Tracy, formerly sales manager of the **White Company** and later of the **General Motors Truck Company,** has been appointed general sales manager of the **Headley Emulsified Products Company,** Philadelphia, Pa.

Howard R. Gass, sales engineer, and **Nelson R. Rehnquist,** who has been in charge of purchases and stores for the **St. Louis Car Company,** St. Louis, Mo., have been elected vice-presidents. **George L. Kippenberger,** vice-president, has been made first vice-president.

The Link-Belt Limited has opened a branch office in The Standard Bank Building, 510 West Hastings street, Vancouver, B. C., with **Frank B. Wetherill** in charge. Mr. Wetherill joined the Link-Belt organization 15 years ago, and for a number of years has been manager of the company's office and warehouse in Portland, Ore.

A. A. Helwig, southwestern representative of **The Bradford Corporation,** has been appointed acting vice-president, with headquarters at Chicago, to take the place of W. C. Doering, vice-president, who has resigned. **B. C. Wilkerson** has been appointed southwestern representative, with headquarters at St. Louis, succeeding Mr. Helwig.

Jos. E. Nelson & Sons, Inc., Chicago, was incorporated on February 10, to take over the general contracting business of **Jos. E. Nelson & Sons,** a copartnership of John E. Nelson and William H. Nelson. All building construction will be executed by Jos. E. Nelson & Sons, Inc., while all water service work will be handled by the **Nelson Water Service Company.**

The **Permanent Concrete Products Company,** Greenville, Ohio, has secured the rights to manufacture and market "Interlock" precast reinforced concrete cribbing from the **Gerald Company,** Chicago. The former company has appointed the **Prendergast Company,** Marion, Ohio, to act as railroad and industrial sales agent for the cribbing and other products.

John S. Lemley, formerly vice-presiden of the **Viloco Railway Equipment Company** and the **Okadee Company,** Chicago, and of the **Chas. R. Long, Jr. Company,** Louisville, Ky., has resigned from these companies and has purchased an interest in the **T-Z Railway Equipment Co.,** Chicago, and has been elected vice-president of the latter company.

The Yale & Towne Manufacturing Company has enlarged its Philadelphia, Pa. branch and **T. T. Ludlum** formerly in charge of the Holyoke, Mass., branch is in charge of production at the Philadelphia branch and **R. L. Higgins,** assisted by **Harold H. Gade** and **Neal E. McLoughlin** will handle all sales. The sales and service will cover eastern Pennsylvania, southern New Jersey, Delaware and Maryland.

At a meeting of the executive committee of the board of directors of the **American Locomotive Company** at New York on February 6, **Joseph Davis,** vice-president and comptroller, was appointed executive vice-president and **F. Pierce Brent,** assistant comptroller, was appointed comptroller. Joseph Davis was born and educated at Albany, N. Y. He was employed by the Delaware & Hudson and the New York Central and entered the employ of the American Locomotive Company at the time of its formation in 1901. He was appointed comptroller in October, 1909, becoming vice-president and comptroller on January 17, 1917. F. Pierce Brent was born at Onancock, Va., and was educated at Richmond. He entered the service of the American Locomotive Company at the Richmond plant in 1907 and was transferred to the general accounting department in New York in 1911. On December 1, 1917, he was appointed general shop accountant and was made assistant comptroller on October 1, 1928.

T. W. Macon, traffic manager of the **General Railway Signal Company,** with headquarters at Rochester, N Y., has been appointed assistant to vice-president, with the same headquarters. In

T. W. Macon

addition to special duties assigned, Mr. Macon continues in charge of domestic and foreign traffic, in which he has been active with this company for the past twenty years. He has taken a prominent part in traffic matters as a member of the National Industrial Traffic League and other organizations.

Walter C. Doering, vice-president of the **Bradford Corporation,** with headquarters at Chicago, has resigned to become vice-president of the **American Steel Foundries,** with headquarters at St. Louis, Mo. He was born in 1886, and in January, 1900, entered the employ of the St. Louis Car Wheel Company, which was merged into the Southern Wheel Company in 1913. In the latter year he was appointed assistant

Walter C. Doering

to vice-president and in 1917 was elected vice-president of the latter named company, and continued in that capacity until he resigned on January 1, 1923, to become vice-president of the Bradford Corporation, which position he has held until his recent election.

The American Brake Shoe & Foundry Company

Consolidated profits amounting to $3,230,231 were reported by the American Brake Shoe & Foundry Company for the year ending December 31, 1929, according to the Fourteenth Annual Report issued on February 1. The foregoing figure compares with a consolidated profit of $3,108,121 for the year ending December 31, 1928. The 1929 earnings, when combined with the equity of American Brake Shoe & Foundry stockholders in the undivided profits of associated companies, were equivalent to $5.50 per share on the company's outstanding common stock after allowance for preferred dividends.

The consolidated balance sheet as of December 31, 1929, lists current assets of $13,211,679 and current liabilities of $1,520,197, or net current assets over current liabilities of $11,691,481. Of the current assets $1,581,564, or an amount in excess of the total current liabilities, is in cash. Marketable loans and investments are set up on the balance sheet at $5,396,755. Included among these marketable investments are 12,000 shares of American Brake Shoe & Foundry Company common stock, which were purchased during the stock market break of last Fall. Also there was a substantial block of the common stock of the Bucyrus-Erie Company purchased at the same time.

Capital assets exclusive of patents and good will increased $1,351,067 over the figure for the previous year. Of this increase, $905,849 was involved in the ac-

quisition of additional stock of the American Manganese Steel Company, and the Ramapo Ajax Corporation; 3,296 shares of preferred stock and 1,180 shares of common stock of the former being acquired to give the American Brake Shoe & Foundry Company a 92 per cent interest in the American Manganese Steel Company. The purchase of Ramapo Ajax common stock totaled 6,950 shares, resulting in the ownership of all its stock as compared with previous interest of 88.5 per cent.

During the year, $1,312,082 was written off patent and good will accounts and charged to surplus. After charging off this item, the surplus was reduced $101,-367 as compared with the 1928 surplus figure.

In his remarks to the stockholders, Joseph B. Terbell, chairman, reveals that during the year the Absco Corporation has been formed as a medium for investment in the common stock of the American Brake Shoe & Foundry Company. The stock of the Absco Corporation is sold to officers and employees on a deferred payment plan, all the proceeds of such sales being invested in the Brake Shoe common stock.

In commenting upon immediate prospects of business, Mr. Terbell states that any forecast for the current year should be based on the developments in business generally, since experience has revealed that the prosperity of the American Brake Shoe & Foundry Company corresponds closely to the general trend. Orders to date, he concluded, are most encouraging.

Air Reduction Company Annual Report

The annual report of the Air Reduction Company, Inc., for the year ending December 31, 1929, shows net earnings after all charges including federal taxes of $5,972,996 as compared with a 1928 net profit figure of $3,208,993. The 1929 net earnings were equivalent to $7.75 per share on the 770,402 3/5 shares of common stock outstanding on December 31 as against 1928 earnings of $4.60 per share on the 696,793 3/5 shares outstanding at the close of that year. The balance sheet as of December 31, 1929, lists current assets of $14,789,263 as against total current liabilities of $1,098,006. Cash on hand amounted to $4,217,867, or approximately four times the total current liability figure.

The consolidated income report for the year ending December 31, 1929, follows:

Gross Income	$21,801,994
Operating Expenses	13,105,608
Operating Income	8,696,386
Reserves	2,159,506
Net Profit before Federal Taxes	6,536,880
Federal Taxes 1929	563,884
Net Profit earned on Outstanding Stock	$5,972,996

Obituary

Harry Ainsworth, president of **Williams, White & Co.**, Moline, Ill., died in that city on February 6.

Trade Publication

PHOTOMICROGRAPHY.—Simple and brief instructions for preparing iron and steel specimens for the microscope, together with an explanation of what the microscope shows, is included in a 15-page illustrated bulletin entitled "A. W. P. Welds Under the Microscope". The bulletin is being distributed by the Alloy Welding Processes, Ferry Lane Works, Forest Road, London, E 17, England.

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The Central Vermont Changes Hands

C. D. Watson (left) special master of United States District Court, shown handing a federal court deed for the property of the Central Vermont Railway Company to Vice-President George A. Gaston, of the Central Vermont Railway, Inc., (right), while Judge J. W. Redmond (center), former receiver of the Central Vermont, looks on. The Central Vermont Railway Company, which was in receivership from December 12, 1927, to February 1, 1930, was sold at public auction last July for $27,000,000 to the Central Vermont Railway, Inc., a subsidiary of the Canadian National.

Construction

CHICAGO & NORTH WESTERN.—A contract for the construction of reinforced concrete platforms and other freight handling facilities for the inbound and outbound freight station on the ground floor of the Merchandise Mart at Chicago has been awarded to John Griffith & Son Company, Chicago, at a cost of about $650,000.

CHICAGO, ROCK ISLAND & PACIFIC.—This company closes bids on February 20 for the grading for the construction of a single track line between Dalhart, Tex., and Morse, 65 miles. Track laying will be undertaken by company forces.

DELAWARE & HUDSON.—The Public Service Commission of New York has notified this company that it does not consider as excessive the low bid of $73,893 submitted by the Arthur McMullen Company of New York City for the elimination of the Essex-Willsboro county highway and Jacobs crossings in Willsboro, N. Y. The commission has also approved estimates of cost totaling $139,000 for the elimination of Curriers crossing, Crown Point, N. Y.

GULF COAST LINES (St. Louis, Brownsville & Mexico).—This company received bids until February 15 for the construction of a one-story brick, tile and concrete passenger station at Donna, Tex. The structure, which will have a stucco finish, will have outside dimensions of 25 ft. by 84 ft.

ILLINOIS TERMINAL.—This company has asked for bids for the construction of the concrete substructure for a new elevated roadway in St. Louis, Mo., which will connect the McKinley bridge over the Mississippi river with the new freight and passenger terminal at Twelfth street and Lucas avenue. A contract for furnishing the steel for this work has already been awarded.

LEHIGH VALLEY.—The New York Public Service Commission has directed the elimination of the Main street crossing of this company's tracks in Manchester, N. Y., by carrying the street under the grade of the railroad.

NEW YORK, NEW HAVEN & HARTFORD.—This company has authorized the reconstruction of its bridge over West river, near New Haven, Conn., at an estimated cost of $175,000; the installation of a pneumatic tube messenger system at the Cedar Hill yards, New Haven, at a cost of approximately $100,000, and the filling in of a timber trestle at Danbury, Conn., at a probable cost of $50,000. Plans have also been prepared for equipping for electrical operation a drawbridge at South Norwalk, Conn., at an estimated cost of $58,000.

PENNSYLVANIA.—In connection with its port and terminal development program

at Jersey City, N. J., this company has awarded to the Terminal Development Company of New York a contract for the construction of a new pier on the location of old pier D, at a probable cost of $1,199,226. The contract for the removal of the old Lehigh Valley-Pennsylvania drawbridge over Newark Bay at Greenville, N. J., has been awarded to J. Rich Steers, Inc., New York City, at an approximate cost of $171,000. As reported in the *Railway Age* of February 1, a new bridge across Newark Bay, constructed jointly by the two railroads, was opened for traffic on January 23. A contract has also been let to the Hill Construction Company, Mt. Holly, N. J., for the construction of a bridge over state highway No. 39 at Ewansville, N. J., at a cost of about $43,000.

PERE MARQUETTE.—This company plans the construction of new water-treating plants at Wyoming, Mich., and New Buffalo and a new water station at Benton Harbor. It is planned to construct new coaling stations at New Buffalo and at St. Thomas, Ont., and Sarnia. The coaling facilities at New Buffalo will be of 300-ton capacity. Passing tracks will be extended at Leamington, Ont., Bridgetown, Rodney, Iona, Dresden and Corunna.

ST. LOUIS SOUTHWESTERN.—This company has applied to the Interstate Commerce Commission for authority to build an extension from Van Junction to Van, Tex., 17 miles, to reach a new oil field.

TEXAS SHORT LINE.—This company has applied to the Interstate Commerce Commission for a certificate for the construction of a line from a connection with the Texas & Pacific at Grand Saline to Van, Tex., 11 miles, to reach a new oil field.

A FIRE which on January 30 destroyed a portion of the interlocking tower at Pana, Ill., 85 miles northeast of St. Louis, Mo., delayed 75 passenger and freight trains of the Cleveland, Cincinnati, Chicago & St. Louis, the Baltimore & Ohio, the Chicago & Eastern Illinois and the Illinois Central.

* * *

A Union Pacific Local at Kansas City, Mo.

Railway Finance

BEAUHARNOIS RAILWAY.—*Incorporation.*—Approval was given last week by the Railway Committee of the Legislative Assembly in Quebec incorporating the Beauharnois Railway Company, a subsidiary of the Beauharnois Light, Heat & Power Company.

The railway will run parallel with the canal being built for the development of 500,000 horsepower in the St. Lawrence river in the Quebec section about 30 miles west of Montreal.

The powers in the bill permit of the traffic which will be developed along the canal being given distribution over the company's own lines and over the lines of other companies with which arrangements will be made, and the bill also enables the company to operate steamships in the canal, and do a general passenger and freight navigation business.

Power to build tramways is contained in one of the clauses, and Aime Geoffrion, who appeared for the bill, dropped this clause, saying there was no intention of operating tramways.

Power to borrow up to $50,000 a mile of the railway was given with further authorization to borrow up to the actual cost for other enterprises. The company is authorized to operate hotels and parks.

BRATTLEBORO & WHITEHALL.—*Acquisition.*—This company has applied to the Interstate Commerce Commission for authority to acquire control of the West River, which has a line from Brattleboro to South Londonderry, Vt., 35.7 miles, which was partially destroyed by the flood of November, 1927. The application says it is proposed to aid in the rebuilding and operation of the line. An application for authority to abandon the line has been pending before the commission. The West River has also filed an application for authority to operate the road, which was formerly operated by the Central Vermont under lease.

BRISTOL.—*Abandonment.*—The Interstate Commerce Commission has authorized this company to abandon its line of railroad extending from Bristol, Vt., to New Haven Jct., 6 miles. The property was placed in the hands of a receiver in 1926 in a proceeding calling for the foreclosure of $100,000 of 4 per cent bonds which matured in 1921.

CANADIAN PACIFIC.—*Stock Split.*—This company will apply to Parliament for amendment to its charter permitting it to change the par value of its ordinary shares from $100 to $25 each, and then to issue four new shares for each share now held. The company now pays 10 per cent per annum on its common stock, and as no change in the rate of distribution is contemplated, the new shares will pay an annual dividend of $2.50 per share. The company will seek legislation, it is stated, to increase the directorate to a number not to exceed 24. President Beatty, in announcing the plan, said: "This action of the directors has been dictated by a desire to place the company's shares within the reach of investors of moderate means, and thus increase the number of its shareholders, particularly in Canada."

DELAWARE, LACKAWANNA & WESTERN.—*Bonds.*—J. P. Morgan & Co., is offering, subject to the authorization of the Interstate Commerce Commission, $25,000,000 of construction mortgage bonds of the Morris & Essex, due in 1955. Of the issue $10,000,000 are designated series A, bearing interest at 5 per cent, and the remainder, series B, bearing 4½ per cent. The bonds are guaranteed by the Lackawanna, and are not redeemable prior to maturity. Series A is offered at 103.5, to yield 4.76 per cent and series B at 96.5 to yield 4.73 per cent.

LOUISVILLE & NASHVILLE.—*Bonds.*—J. P. Morgan & Co. is offering, subject to the approval of the Interstate Commerce Commission, $15,000,000 of first and refunding 4½ per cent, Series C, bonds and $5,000,000 of unified 4 per cent mortgage bonds of this company. The series C issue, which will mature in 2003, is offered at 95, to yield 4.74 per cent. This issue is redeemable after 1939 at 105. The Unified mortgage bonds, which are non-redeemable, will mature in 1940, and are offered at 94.5, to yield 4.65 per cent.

MIDLAND VALLEY.—*Bonds.*—The Interstate Commerce Commission has authorized this company to issue $289,000 of first mortgage 5 per cent 30-year bonds in partial re-imbursement of capital expenditures. The bonds may be pledged and repledged from time to time as security for short term notes.

MINERAL RANGE.—*Abandonment.*—This company and the Hancock & Calumet have applied to the Interstate Commerce Commission for authority to abandon the line from Lake Junction to Osceola, Mich., 6 miles.

NEW YORK CENTRAL.—*Abandonment.*—The Interstate Commerce Commission has authorized this company to abandon certain portions of its 6.4 mile line from East Syracuse, N. Y., to the westerly limit of the City of Syracuse and to operate over new portions of line to be constructed in lieu of portions abandoned. The change authorized is a part of the company's project for grade crossing elimination in Syracuse. The entire project involves an expenditure of $30,000 of which state and local governments will bear 50 per cent.

NEW YORK CENTRAL.—*Equipment Trust.*—The Interstate Commerce Commission has authorized this company to assume obligation and liability in respect of $5,280,000 of its 4½ per cent second equipment trust of 1929 certificates. The issue will mature from 1930 to 1944 and is authorized for sale to the highest bidder,

the Bankers Company of New York, the Continental Illinois Company and Evans, Stillman & Co., at 98.657, making the average cost to the railroad 4.715 per cent.

NEW YORK CENTRAL.—*Stock.*—This company has applied to the Interstate Commerce Commission for authority to issue $7,500,000 of capital stock, to be offered for subscription to officers and employees of the system at $130 a share, payable in 24 monthly instalments.

Acquisition.—This company has applied to the Interstate Commerce Commission for authority to acquire control of the Owasco River by purchase of its capital stock from the International Harvester Company for $75,000. This was one of the short lines which the commission required the New York Central to make an effort to acquire as a condition to the authority to lease the Michigan Central and Big Four.

NEW YORK CENTRAL.—*Sale of Stock to Employees.*—This company has applied to the Interstate Commerce Commission for authority to issue 75,000 shares of its capital stock, to be offered to officers and employees for subscription on a monthly payment plan at $130 per share. Recently the stock has been selling around $180 per share. Subject to consent of the commission, the stock offering will be made on March 1, and subscriptions will be received for a limited time. Any employee who has been for two years or longer continuously in the service of the company or of any of its controlled companies, will be entitled to subscribe for not more than one share of stock for each $400 of his annual rate of pay with a maximum of fifty shares, subject to allotment. Payment for the stock is to be made in monthly instalments of $5 per share, to be deducted upon the payroll. Interest at 6 per cent will be allowed upon the monthly payments and credited to the account of the subscriber in part payment for the stock. The present annual dividend is at the rate of $8 per share, on which basis employees buying at the price of $130 a share will receive a return of 6.15 per cent upon their investment. On January 7, 1925, the company made an offering of 35,000 shares of its stock for subscription by employees, at $110 per share. At the time the stock was selling on the New York Stock Exchange around $120 per share. This offer was heavily over-subscribed, subscriptions being received from 41,570 employees for an aggregate of 96,900 shares. Upon these subscriptions 68,747 shares were allotted. Subscriptions for one or two shares received allotment in full and larger subscriptions were scaled down. Later in 1925 a supplementary offering of stock was made to those employees who upon their subscriptions under the earlier offering had not been allotted the full number of shares applied for. Under this supplementary offering additional subscriptions were received for 14,864 shares.

OKLAHOMA CITY-ADA-ATOKA.—*Control of Oklahoma City-Shawnee.*—The Interstate Commerce Commission has authorized this company to acquire control of the Oklahoma City-Shawnee Interurban by the purchase of capital stock and to issue $800,000 of its own capital stock to be delivered at par in payment for a like amount of the capital stock of the interurban line.

PANHANDLE & SANTA FE.—*Operation.*—This company and the Kansas City, Mexico & Orient of Texas have applied to the Interstate Commerce Commission for authority to extend their operations over a line of the Galveston, Harrisburg & San Antonio from Alpine to Paisano, Tex., 11 miles, in lieu of constructing a new track as part of the extension now under construction from Alpine to Presidio, Tex., 86 miles.

PENNSYLVANIA.—*Increase in Authorized Capital.*—President Atterbury of this company has announced that at the Annual Meeting next April the board of directors will request the stockholders to authorize an increase of its capital stock to the extent of $170,000,000 for future issue. When the recent issues are completed, only about $30,000,000 of the present authorized stock will be available for issue.

WABASH.—*Stock of Lehigh Valley.*—The Wabash has filed with the Interstate Commerce Commission a supplemental application for a modification of the order of March 14, 1928, in which the commission authorized an issue of $17,867,000 of refunding and general mortgage bonds on condition that 177,900 shares of Lehigh Valley stock should not be pledged or disposed of without further order of the commission. The company states that having purchased the stock "for the purpose of protecting its interest in the eastern trunk line situation," it proposes to hold it, but desires authority to pledge it as collateral for short-term loans.

WACO, BEAUMONT, TRINITY & SABINE.—*Receivership.*—District Judge S. W. Dean of Navasota, Tex., has appointed Paul T. Sanderson, secretary and general manager of the Trinity Valley Southern, Trinity, Tex., as receiver for this railroad. The company has assets of approximately $2,640,000 and obligations of $800,000, according to a statement of R. C. Duff, president.

YAZOO & MISSISSIPPI VALLEY.—*Abandonment.*—This company has applied to the Interstate Commerce Commission for authority to abandon a line from Helm to Jacobs, Miss., 12.5 miles.

Dividends Declared

Chicago, Rock Island & Pacific.—Common, $1.75, quarterly, payable March 31 to holders of record March 7.

Green Bay & Western.—5 per cent, payable February 10 to holders of record February 8.

St. Louis-San Francisco.—Common, 2 per cent, quarterly, payable April 1 to holders of record March 1.

Average Prices of Stocks and of Bonds

	Feb. 11	Last week	Last year
Average price of 20 representative railway stocks.	135.88	132.32	133.65
Average price of 20 representative railway bonds..	92.50	92.44	91.53

Railway Officers

Executive

Hale Holden, Jr., has been appointed assistant to the president of the Pullman Company at Chicago.

G. B. Davis has been appointed assistant to the vice-president in charge of traffic of the St. Louis-San Francisco, with headquarters at St. Louis, Mo.

S. E. Cotter, vice-president in charge of operation of the Wabash, with headquarters at St. Louis, Mo., has also been elected to a similar position on the Ann Arbor.

F. H. Dierks, general manager of the De Queen & Eastern and the Texas, Oklahoma & Eastern, with headquarters at Kansas City, Mo., has also been elected president of the De Queen & Eastern.

F. C. Krauser, auditor and purchasing agent of the Rio Grande Southern, with headquarters at Denver, Colo., has been appointed assistant to the receiver. **R. F. Watkins,** secretary and treasurer at Denver, has been appointed treasurer for the receiver.

J. B. Brantly, assistant general freight agent of the Atlantic Coast Line, with headquarters at Wilmington, N. C., has been appointed assistant to vice-president. **F. L. Glover,** assistant to freight traffic manager of the Atlantic Coast Line, with headquarters at Wilmington, N. C., has also been appointed assistant to vice-president.

Harley L. Clarke, president of the Utilities Power & Light Corporation, Chicago, has also been elected chairman of the board of the Litchfield & Madison. **W. M. Duncan,** vice-president of the Litchfield & Madison, with headquarters at Edwardsville, Ill., has been elected executive vice-president. **J. N. Canavan,** vice-president of the Utilities Power & Light Corporation, has also been elected senior vice-president of the L. & M., with headquarters at Chicago. **W. C. Van Allen,** vice-president of the U. P. & L. Corp., Chicago, has also been elected vice-president in charge of traffic of the L. & M. **S. D. Wheeler,** auditor, treasurer, secretary and general freight agent of the L. & M., has been elected vice-president and auditor, with headquarters as before at Edwardsville.

Financial, Legal and Accounting

J. E. Tunnell has been appointed claim agent of the Colorado & Southern, with headquarters at Denver, Colo.

J. C. Kauffman has been appointed general attorney of the Pere Marquette, with headquarters at Detroit, Mich.

F. J. Seiberlich, general accountant of the Great Northern, has been promoted to assistant general auditor, with headquarters as before at St. Paul, Minn.

D. H. Bender, vice-president and treasurer, and **W. A. Horner,** vice-president and secretary, of the Utilities Power & Light Corporation, Chicago, have also been elected treasurer and secretary respectively of the Litchfield & Madison. **Ira E. Guthrie** has been appointed assistant treasurer of the L. & M., with headquarters at Chicago.

W. F. Dudley, credit officer of the Chicago, Milwaukee, St. Paul & Pacific, with headquarters at Chicago, retired on January 1 after 56 years of service with the accounting department of that railroad. Mr. Dudley became auditor of station accounts of the Milwaukee in 1874. Eight year later he was appointed freight auditor, then being advanced to assistant general auditor in 1897. In 1910 his title was changed to auditor and in 1913 he became auditor of traffic. Mr. Dudley had been credit officer of the Milwaukee since 1920. He was one of the organizers of the American Association of Railway Accounting Officers, the predecessor of the Railway Accounting Officers Association, in 1887.

Operating

R. J. Beilsmith, assistant superintendent of telegraph of the Wabash, with headquarters at Decatur, Ill., has also been appointed superintendent of telegraph of the Ann Arbor.

J. N. Brand, general manager of the Atlantic Coast Line, with headquarters at Wilmington, N. C., has also been appointed general manager of the Charleston & Western Carolina.

W. C. Griffin has been appointed district manager of the Car Service division of the American Railway Association at Birmingham, Ala., succeeding **R. W. Edwards,** who has been transferred to Dallas, Tex. Mr. Edwards succeeds **Robert C. Andrews,** deceased.

U. W. Edmonds, trainmaster of the Peoria division of the New York, Chicago & St. Louis, has been promoted to superintendent of the same division, with headquarters as before at LaFayette, Ind., succeeding **J. W. O'Brien,** deceased. **H. J. Carlson** has been appointed trainmaster of the Peoria division, replacing Mr. Edmonds.

Charles E. Green, superintendent of the Missouri division of the Chicago, Rock Island & Pacific, with headquarters at Trenton, Mo., has been promoted to assistant to the vice-president of operation in charge of labor matters, with headquarters at Chicago. **H. J. Sewell,** superintendent of the Indian Territory division at Shawnee, Okla., has been transferred to the Missouri division to succeed Mr. Green, and the Indian Territory division has been consolidated with the Pan Handle division of which **David Vanhecke** is superintendent, with headquarters at Elreno, Okla.

Matthew L. Gaetz, who has been promoted to superintendent of the Minot division of the Great Northern, with quarters at Minot, N. D., has been in the service of the operating department of that road for more than 25 years. He was born at Wadena, Minn., on March 15, 1884, and after graduating from high school in May, 1901, entered railway service three years later on the Great Northern. He was promoted to conductor on February 3, 1907, and served in that capacity for the following 11 years on the Dakota and Brecken-

Matthew L. Gaetz

ridge divisions. During 1917 and 1918 he acted successively as trainmaster at Grand Forks, N. D., yardmaster at Devils Lake, N. D., trainmaster at Minot and Williston, N. D., and student in the accounting department at St. Paul, Minn. On January 1, 1919, Mr. Gaetz was appointed trainmaster at Willmar, Minn., being transferred to Grand Forks on July 16, 1928. His position to superintendent of the Minot division became effective on February 1.

F. N. Melius, general superintendent of the New York terminal district and marine manager of the New York Central, has been appointed assistant general manager of the New York terminal district including the marine department, with headquarters at New York City, as before. The positions Mr. Melius held before his recent appointment have been abolished. He was born on December 13, 1876, at Hudson, N. Y., and was educated in the public schools. On January 22, 1890, Mr. Melius commenced his railway career as a messenger boy at Albany, N. Y., with the New York Central (at that time the New York Central & Hudson River) and has been in their employ since that time. A year later he was transferred to the 65th Street Yard, at New York, as a call boy, and until September 15, 1896, he performed clerical work in various yards. At that time he was appointed clerk in the assistant superintendent's office. On May 15, 1902, he was transferred as car agent in the office of the superintendent of car service. On December 1, 1906, he was appointed assistant general yardmaster. From 1907 to 1922, he served as assistant train master, train master, assistant superintendent, and superintendent of the Hudson division. On November 6, 1922, he was appointed

F. N. Melius

assistant manager of the marine department, and on July 1, 1925, he became general superintendent of the New York terminal district. On May 5, 1925, the position of assistant manager of the marine department was added to his duties as general superintendent, and in 1927 he was appointed marine manager and general superintendent, the position he held at the time of his recent appointment.

Traffic

E. W. Dozier has been appointed assistant traffic manager of the American Short Line Railroad Association, with headquarters at Chicago.

W. L. Seeley, industrial agent on the Chicago Great Western at Chicago, has been appointed general agent at Dubuque, Iowa.

N. L. Callens has been appointed assistant general freight agent of the Chicago, Rock Island & Gulf, with headquarters at Fort Worth, Tex.

V. C. Kerr has been appointed acting general agent of the Dominion Atlantic, with headquarters at Boston, Mass., replacing **K. L. Chipman,** deceased.

W. G. Strohm has been appointed general freight agent of the Litchfield & Madison, with headquarters at St. Louis, Mo. **A. W. Duncan,** assistant general superintendent, has been appointed general industrial agent, with headquarters as before at Edwardsville, Ill. **W. T. McNamara** has been appointed assistant general freight agent at Edwardsville.

C. L. Hinnant and **W. H. Henderson,** assistant general freight agents of the

Atlantic Coast Line, have been promoted to general freight agents, succeeding **R. J. Doss** and **W. C. Ragin** who have been appointed assistant freight traffic managers. **F. E. McKenzie, E. M. Finch, L. L. Doss, E. C. Hicks, Jr.,** and **L. A. Kienzle** will serve as general freight agents. The headquarters of the foregoing will be located at Wilmington, N. C. **J. F. Mead,** general freight agent, has been promoted to the position of assistant freight traffic manager, with headquarters at Jacksonville, Fla.

J. E. Anderson, general freight agent of the Cleveland, Cincinnati, Chicago & St. Louis, has been promoted to traffic manager, with headquarters at Cincinnati, O., as before. Mr. Anderson was born in Lawrence, Kan. He entered railway service in 1905, as a clerk with the Big Four, and since that time he has always served with this road. He was successively rate clerk, contracting freight agent, traveling freight agent, commercial agent, general agent, division freight agent, and in 1928 he was appointed general freight agent, which position he held at the time of his recent appointment.

Engineering, Maintenance of Way and Signaling

John G. Sheldrick, resident engineer on the Minneapolis, St. Paul & Salt Ste. Marie, has been promoted to engineer of maintenance of way, with headquarters as before at Minneapolis, Minn.

Morris Donahue, general supervisor of maintenance of the Chicago & Alton, has been appointed general roadmaster, with headquarters as before at Chicago, and with jurisdiction confined to maintenance of roadway.

R. A. Handley has been appointed assistant engineer of the Louisville & Nashville, with headquarters at Paris, Ky., succeeding **A. A. Pogue,** who has been appointed track supervisor, replacing **Thomas Keller,** retired.

W. H. Miesse, engineer maintenance of way of the Evansville, Indianapolis & Terre Haute, with headquarters at Washington, Ind., has been appointed division engineer of the Terre Haute division of the Cleveland, Cincinnati, Chicago & St. Louis, with headquarters at the same point. **W. D. Williams,** engineer maintenance of way of the Cincinnati Northern, has been appointed division engineer of the Northern division of the Big Four, with headquarters as before at Van Wert, Ohio.

Harold T. Livingston, who has been promoted to engineer of construction of the Chicago, Rock Island & Pacific, with headquarters at Chicago, has been connected with that railway for 20 years. He graduated from a course in civil engineering at the University of Missouri and entered railroad service in 1909 in the engineering department. After occupying various minor positions he was promoted to assistant engineer on the Iowa division at Cedar Rapids, Iowa, in 1915, then being transferred to Manly, Iowa, and back to Cedar Rapids. In 1916, Mr. Livingston was appointed master carpenter at Cedar Rapids, where he remained until 1917, when he enlisted in the Army. During the world war he served in France as captain of Company E, Three Hundred and Thirteenth Engineers, Eighty-Eighth division. Upon returning to the United

Harold T. Livingston

States he was appointed division engineer of the Minnesota division of the Rock Island at Manly in 1919. In 1921 he was transferred to the Des Moines Valley division at Des Moines, Iowa, where he remained until March, 1923, when he was transferred to the Arkansas division at Little Rock, Ark. Mr. Livingston's promotion to engineer of construction of the Rock Island became effective January 16.

Mechanical

The headquarters of **F. B. Barclay,** superintendent of motive power of the Illinois Central, have been transferred from Memphis, Tenn., to Chicago.

Walter Marshall, engineer of train lighting of the Chicago, Milwaukee, St. Paul & Pacific, has been promoted to assistant to the superintendent of motive power, with headquarters as before at Milwaukee, Wis. **Carl E. Wood,** air brake and electrical supervisor at Tacoma, Wash., has been promoted to engineer of train lighting to succeed Mr. Marshall.

Purchases and Stores

Frank W. Taylor, purchasing agent of the Southern Pacific, has been promoted to general purchasing agent with headquarters as before at San Francisco, Cal. A sketch of Mr. Taylor's railway career, together with a reproduction of his photograph, appeared in the *Railway Age* of October 26, 1929, page 996.

Special

C. H. Slayman has been appointed industrial engineer of the Pere Marquette, with headquarters at Detroit, Mich.

Obituary

C. E. Brook, master mechanic on the Western lines of the Chicago, Milwaukee, St. Paul & Pacific at Bellingham, Wash., died on January 12.

J. M. Forbes, superintendent of transportation of the Arkansas, with headquarters at Star City, died on February 1 after an illness of several months. Mr. Forbes was 53 years old.

F. C. Biette, who was recently appointed to take charge of the Canadian National colonization work in the Peace River country, in association with the Northern Alberta, as announced in the *Railway Age* of January 11, page 182, died at Winnipeg, Man., on February 6, enroute to take up the duties of his new position.

John C. Sartelle, general agent for the Atchison, Topeka & Santa Fe at St. Louis, Mo., died at his home in St. Louis County on February 4, after a four-day illness from pneumonia. Mr. Sartelle has been general agent at St. Louis since 1910 and at the time of his death was 60 years of age.

Herman F. Moeller, former general freight agent of the Pere Marquette at Detroit, Mich., died at Little Rock, Ark., on January 14, at the age of 64 years. Mr. Moeller who was a native of Saginaw, Mich., entered railway service in 1882 as a clerk on the Flint & Pere Marquette, the predecessor of the Pere Marquette. He advanced through various minor positions in the traffic department, then serving as general passenger agent from 1898 until 1912. At the time of his death he was secretary and general manager in charge of lumbering operations of the Jerome Hardwood Lumber Company with headquarters at Jerome, Ark.

J. H. Redding, general superintendent of the western division of the Pennsylvania, with headquarters at Pittsburgh, Pa., died on February 2. Mr. Redding was born on November 26, 1877, at Philadelphia, Pa. He was educated in the public schools and entered railway service on May 1, 1897, with the Pennsylvania, in the office of the chief engineer, maintenance of way. He has been in the employ of this road since that time, serving in various minor engineering positions, and as assistant supervisor, supervisor, division engineer, assistant superintendent, and superintendent. On September 16, 1926, he was appointed general superintendent of the Western division, the position he held at the time of his death.

Frederic G. Ranney, former treasurer of the Chicago, Milwaukee, St. Paul & Pacific, died at Chicago on February 11, at the age of 88 years. At the time of his retirement in 1917, Mr. Ranney had been in the service of the Milwaukee for 51 years, 30 years of which he had been treasurer of that company. He entered railway service in 1866 as general bookkeeper for the Western Union (now a part of the Milwaukee) and eight years later he was appointed secretary and treasurer. When the Western Union was absorbed by the Milwaukee in 1879 he was appointed cashier of the latter road, then being promoted to assistant treasurer in 1882. Mr. Ranney served as treasurer of the Milwaukee from 1887 to 1917.

William B. Knight, former assistant freight traffic manager of the Missouri Pacific, with headquarters at St. Louis, Mo., died at his home at El Dorado, Ark., on February 8, at the age of 63 years. Mr. Knight had been in railway service for 33 years, beginning in 1883 when he became a clerk in the office of the auditor of passenger accounts of the Wabash, St. Louis & Pacific (now the Wabash). Later he served for a short time as a tariff clerk on the Atchison, Topeka & Santa Fe, entering Missouri Pacific service in 1889 as a tariff clerk. After advancing through various minor positions he was appointed assistant general freight agent at St. Louis in 1899, then being promoted to general freight gent at St. Louis in 1905. In 1907 Mr. Knight was appointed chief of the tariff bureau of the Missouri Pacific and in 1915 he was promoted to assistant freight traffic manager, a position he held until his retirement from railway service in the following year. At the time of his death he was traffic manager of the Lion Oil Refining Company at El Dorado.

George Smith Shafer, president of the Norfolk & Portsmouth Belt Line, with headquarters at Norfolk, Va., died at his home in Portsmouth, Va., on January 29. Mr. Shafer was born on May 8, 1862, in North Coventry Township, Chester County, Pennsylvania. After graduating from the Hill School, Pottstown, Pa., in 1882, he entered the service of the Pennsylvania as a rodman in the engineering department. He held several positions in this department until he was promoted to assistant engineer. In 1896 he was sent to Norfolk to make a survey for the Norfolk & Portsmouth Belt Line which was then under contemplation. When this road began its operations, he was appointed superintendent, and later general manager. In April, 1917, he was elected president, which position he held until his death, except during the period of Federal control when he served as chief engineer and purchasing agent, being re-elected to the position of president at the termination of federal control.

Winfield S. Cooper, assistant to the general manager of the Chicago, Milwaukee, St. Paul & Pacific, with headquarters at Chicago, died at his home in that city on February 10 after an illness of several months duration. Mr. Cooper had been engaged in railway work for more than 52 years. He was born on February 15, 1862, and entered railroad service as a telegraph operator on the New York, Pennsylvania & Ohio (now part of the Erie) at Galion, Ohio, in 1877. Four years later he became an operator and then a train dispatcher on the Louisville & Nashville, returning to the New York, Pennsylvania & Ohio as a dispatcher in 1882. From 1883 to 1886 he served as a train dispatcher on the Canadian Pacific and in the latter year he entered the service of the Milwaukee in a similar position. In 1895 Mr. Cooper was advanced to trainmaster at Milwaukee, Wis., in 1903 he was promoted to superintendent at Minneapolis, Minn., and in 1906 he was further promoted to assistant general superintendent of the Southern district at Chicago. He became general superintendent of the Southern district at Chicago in February, 1912, in May, 1918, being appointed assistant to the vice-president. Mr. Cooper had been assistant to the general manager of the lines east of Mobridge, S. D., since August, 1918.

Albert W. Anderson, president and general manager of the Charleston & Western Carolina, died at his home in North Augusta, S. C., on February 3, after an illness of two weeks, at the age of 66 years. Mr. Anderson was born on November 27, 1863, near Cartersville, Ga. He entered railway service in 1882 as watchman and clerk on the South Carolina division of the Richmond & Danville (now part of the Southern) at Clinton, S. C. He served as telegraph operator, operator and clerk with this road between the years 1882 and 1885. During 1885 he was agent for the Central of Georgia at Laurens, S. C. In 1890 he was appointed general agent at Greenville, S. C., and in 1891, chief clerk in the freight and passenger department at August, Ga. During that year he also served as general agent of the Richmond & Danville at Charleston, S. C. In 1892 he was appointed general agent of the Central of Georgia at Greenville and in 1893 superintendent of the Port Royal & Western Carolina (now the Charleston & Western Carolina). From 1896 to 1905, he served as general superintendent of the Charleston & Western Carolina; April 1, 1905, to November, 1910, as general superintendent first division of the Atlantic Coast Line, north of Savannah, Ga., and November, 1910, to May, 1915, as general manager, Charleston & Western Carolina. From May, 1915, to the period of Federal control, he served as vice-president and general manager, of the Charleston & Western Carolina. During Federal control he held the positions of general superintendent of the Georgia and the Charleston & Western Carolina and in addition had jurisdiction over all terminals at Augusta, Ga. In 1920 he was appointed vice-president and general manager, later being elected president.

Horace F. Smith, senior vice-president of the Nashville, Chattanooga & St. Louis, with headquarters at Nashville, Tenn., died in that city on February 7 at the age of 81 years. Mr. Smith lacked but three days of completing 65 years of railway service, during 30 of which he served as head of the N., C. & St. L. traffic department. In 1914 he organized the Southern Weighing and Inspection Bureau and acted as its first chairman. He was born at Mayville, N. Y., on April 30, 1848, and after attending the public schools at Elgin, Ill., entered railway service on February 10, 1865, on the United States Military Railroads at Huntsville, Ala. With these railroads he served there as a clerk and telegraph operator and at Knoxville, Tenn., as agent. After the East Tennessee & Georgia and the East Tennessee & Virginia (now parts of the Southern) were returned to private control, Mr. Smith remained with these roads until December, 1865, when he

Horace F. Smith

became connected with the Adams Express Company. From July, 1866, to July, 1898, he served successively as clerk and agent on the Louisville & Nashville at Louisville, Ky., agent and terminal superintendent at Kansas City, Mo., on the Atchison, Topeka & Santa Fe, terminal superintendent, division freight agent and assistant general freight agent on the L. & N., with the traffic departments of the East Tennessee, Virginia & Georgia and the Queen & Crescent, and general freight agent at Washington, D. C., when the latter two roads were absorbed by the Southern. Mr. Smith was then appointed traffic manager of the N. C. & St. L., with headquarters at Nashville, being elected vice-president and traffic manager in 1906. During federal control of the railroads, from 1918 to 1920, he acted as traffic manager of the Tennessee Central and the Birmingham & Northwestern (now part of the Gulf, Mobile & Northern). He had been senior vice-president of the N. C. & St. L. since March 1, 1928.